



**NORTH WEST
CANCER RESEARCH
FUND**

helping to change lives

Annual Report 2011

FOR THE FINANCIAL YEAR 2009-2010



THE NWCRF BUTTERFLY

Our butterfly is based on the Holly Blue, which, with its long lifespan and flying high in its natural habitat, symbolises our high standards and long standing within the research world. Butterflies are seen throughout the world as a symbol of hope. It is our hope and purpose to find the causes of cancer.

Cover image: On 5th of November 2009, a sculpture was placed at Lancaster University as a gift to symbolise the 10 year relationship between Lancaster University and North West Cancer Research Fund. The sculpture entitled 'Seeking the Light' has been kindly given by celebrated artist Charles Bray

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Who we are, what we do and how we fund...

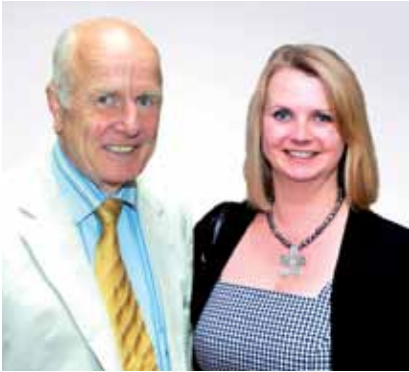
North West Cancer Research Fund is an independent regional charity based in Liverpool with volunteer committees from Mid-Wales to North Cumbria. We receive no government funding and we are not connected to any other cancer charities.

We fund research into the causes of cancer and aim to raise £1m per year. NWCRF fundraise throughout the North West of England and North Wales and for every £1 raised an average of almost 90p goes directly into Research.

Researchers within our area are invited to apply for a grant twice a year. Our Scientific Committee, made up of internationally acclaimed scientists, assess the applications and decide which to fund. We are renowned for our competitive selection process which marks to the highest international standard.

North West Cancer Research Fund started out life as the Friends of the Liverpool Radium Institute in 1948; when founders, Curig Roberts and Colonel Bryson, gathered volunteers who had previously been raising funds for hospitals in the area pre-NHS. Together they decided to fund research into the causes of cancer at the Liverpool Radium Institute. The charity was re-named North West Cancer Research Fund, initially funding research in the University of Liverpool later providing grant funding to Bangor University and Lancaster University.

Chairman and CEO Report



Welcome to our 2010 Annual Report and Accounts covering our financial year 09/10. Every year it is an honour to put this document together and present the activities of our Fund and how our monies have been raised.

We really hope that you enjoy reading it and if you have any feedback, good or bad, we would be delighted to hear from you.

NWCRF is a totally independent, regional charity and we are very proud of our roots and the fact that we have retained our independence since our formation in 1948. Cancer research is a long process and you can read about the different stages further on in this report. NWCRF concentrate on the Cancer Biology and fund the very first stage of that process which means that whilst our discoveries may not make the headlines, they kick start the process. In fact, without us, the bigger breakthroughs might not happen. We are delighted when our researchers move on to attract funds from other sources with deeper pockets, and appreciate the recognition they give to ourselves for starting them off down this line.

Look at the rapidly increasing survival rates for those diagnosed with cancer and you will appreciate the benefits realised from cancer research, particularly through the early detection of cancer. This has only become possible through better understanding of the fundamental causes of cancer. You can read more about how our work will, in the future, assist both the prevention and treatment of cancer from Professor Malcolm Jackson in the scientific section of this Report. Malcolm is entering his second period as Chairman of our Scientific Committee and we are delighted that 7

years on, his passion and enthusiasm for our cause is as strong as it was.

Our year 08/09 was tough, as it was for all charities in the UK, we have been through some troubling times and although we did not see a reduction in donors, we certainly saw a reduction in the amount they were giving. We are relieved that 09/10 proved to be more successful on many levels for the Fund and we have seen an overall increase in our income of nearly 13%. Fortunately, we have had sufficient reserves to keep our research programme intact both for existing projects and for the new areas of scientific enquiry. Our country is turning to the charity sector to support those areas of the economy that miss out on routine government support. Hopefully this will also mean that the public question the 'Value for Money' when giving to charities and hence appreciate the frugality of our own charity's performance.

Heading into the next financial year we are set to hit a milestone figure for our fundraising and we are very much looking forward to that announcement later this year.

Once again we have handled our fundraising activities with dignity and respect. You won't find us recruiting new donors with on-street fundraisers looking to sign you up with a Standing Order; in fact we have no paid fundraisers and actually only employ 3 part-time members of staff. We won't hassle you throughout the year with mailings and a free-pen but what we do PROMISE to do is spend your money

wisely. We like to say that we really are 'Value for Money'. It's simple, our donors are raising money for research into the causes of cancer and as our name suggests that's what we will do. Legacy income has its ups and downs; the year's total is not a reflection of the economic climate or of the activity of our network of helpers. However in the longer term legacies only come as the result of messages put out by our friends. Nearly all the income of our charity is attributable to our army of committee members.

We have a fabulous structure of Committees throughout North Wales and the North West. These provide for a social gathering of friends and/or colleagues who get together to arrange spectacular events and activities with the one aim - tackling cancer, through the provision of funds for fundamental research. Our Committees continue to grow and the time they give so freely is very much appreciated, in fact, one look at our accounts and you will see that they actually provided 30% of our income this year alone. We have been able to continue our focus on the fundamental research into the causes of cancer, thanks to the reliability of funds generated from these marvellous committee members.

We hope you enjoy this report.

JOHN LEWYS-LLOYD
Chairman

ANNE JACKSON
Chief Executive Officer

The Cancer Research Process

We fund the first stage of the cancer research process meaning the discoveries we make don't necessarily make the headlines but they kick-start the research process. Without us the bigger breakthroughs might never happen.

IMPROVING TREATMENTS AND UNDERSTANDING THE DISEASE

STEP 1 – BASIC RESEARCH: CANCER BIOLOGY

- > This research is carried out in a laboratory and is the basis of Cancer Research. *This is the type of research that NCRF funds.*
- > Cancer biology studies how cells work and tries to understand what makes cancer cells different to normal cells.
- > Molecules such as proteins and DNA are also studied so that we may find out what has gone wrong when a cancer develops.
- > These studies may identify new opportunities for treatment that would require further testing in pre-clinical studies.

STEP 2 – PRE-CLINICAL AND TRANSLATIONAL RESEARCH

- > **PRE-CLINICAL RESEARCH** is laboratory work carried out before a drug can be used in a clinical trial. This includes Drug Discovery and Development. Basic Research: Cancer Biology gives us clues about potential new treatment strategies. This in turn leads to drug development where potential new drugs are tested before they are given to patients.
- > **TRANSLATIONAL RESEARCH** is usually carried out in the laboratory and focuses on bridging the gap between the laboratory and patients.

STEP 3 – CLINICAL RESEARCH AND CLINICAL TRIALS

- > **CLINICAL RESEARCH** is carried out to evaluate whether new drugs or treatments are effective and how safe these are for a patient. It often takes many years of laboratory work before a drug can be used in a clinical trial.
- > **CLINICAL TRIALS** are required to test the safety (phase I), initial likelihood of effectiveness (phase II) and then how the new treatment compares with the current standard of treatment (phase III). Treatments usually have to pass through phases I, II, III before they can be considered for routine treatment.
- > The National Institute for Health and Clinical Excellence (NICE) reviews new treatments tested in clinical trials to determine whether they provide benefit for patients and should be available through the NHS.

IDENTIFYING THE RISKS TO REDUCE THE NUMBER OF PEOPLE AFFECTED BY CANCER

POPULATION BASED STUDIES

These are aimed at trying to identify risk factors for cancer so that people can try to avoid things that may cause or make cancer more likely. This type of research has led to proposals to protect children from the harmful effects of UV-sunbeds. Population studies also demonstrated that smoking causes cancer

Fundraising for NWCRCF



1. Penguins, Scarecrows and Statues.

Throughout 2010, NWCRCF highlighted the dangers of the sun's harmful rays. Starting with the Go Penguins in Liverpool, we then moved on to use the Farlam Scarecrow Festival to promote the campaign to prevent people suffering from skin cancer. North West Cancer Research Fund dressed one of dozens of scarecrows in the village in the charity's T-shirt - with the slogan "I'm protecting mine; are you protecting yours" - to highlight the need to cover up when the sun is out. This was part of a summer long campaign to highlight the issues surrounding the sun's harmful rays. The charity also covered up some of Anthony Gormley's celebrated Another Place statues causing a major talking point amongst beachcombers on Crosby sands in Merseyside.

2. Butterfly Ball

"An evening of glamour, fun and lots of dancing! roll on next years event!" just one of the compliments left on our Facebook page following our annual Butterfly Ball. With amazing raffle prizes such as a VIP tour of the Renault Formula 1 factory, guests were really treated to a fabulous evening. Filled with Butterflies, Black Ties and Ball Gowns, Radio Merseyside's Willie Miller played host to over 150 guests at the Craxton Wood Hotel. The wine was flowing and 'The Black Ties' made sure the dancefloor was packed! Raising in the region of £12,000. Our thanks go to everyone who came along on the night and especially to our sponsors Smart Storage. Everyone is looking forward to 24th September 2012 when we can do it all over again.

3. Old England Cricket

July 2010 saw some of England's best loved cricketers return to Neston Cricket Club to play a Neston CC Select XI. Hundreds of spectators turned out on the day to enjoy the sunshine and the sound of leather on willow. Along with a corporate lunch and auction on the day, the charity were delighted to receive just under £3,000.

4. Wirral Coastal Walk

Phew! With scorching May temperatures, a team of Butterfly Winged walkers made their way along the banks of the Mersey for the annual Wirral Coastal Walk. Along with a little pooch who also adorned a pair of wings, the team raised hundreds of pounds and awareness of the cause.

Fundraising for NWCRCF



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5. Irresistible

In March 2010, one of the city's most prestigious hotel's encouraged its guests to put on their pyjamas for charity. Radisson BLU Hotel on Old Hall Street hosted a pyjama party in its luxury Penthouse Suite to celebrate the launch of a limited edition range of nightwear and gifts in aid of NWCRCF.

Not one to shy away from Scouse traditions, invited guests, including the stunning Natasha Hamilton, attended the launch of the Butterfly Silk range and enjoyed pink champagne to celebrate the range of luxury silk nightwear and gifts created by Irresistible Lingerie. Handmade in the UK from 100% pure silk and edged in delicate pink ribbon, the Butterfly silk nightwear range consists of an elegant chemise and clam-digger length pyjamas, as well as a beautiful lingerie bag edged with lace.

All pieces from the nightwear range feature the stunning Butterfly Silk motif which is designed to include the North West Cancer Research butterfly logo symbolising life and hope. The collection is available from nwcrcf.co.uk, irresistible-lingerie.com and several independent lingerie retailers across the North West with prices starting from £18.

6. Kiss Kiss

In October, cakes from Cup of Love Bakery, Jewellery and a glass of fizzy were just some of the treats that our guests were treated to at a ladies night in Utility, Preston.

With competitions from Burt's Bees 'Best Kiss' and Pilgrim 'Design a Charm' it really was a night of big girly jolliness. Our thanks go to Utility who continue to support NWCRCF at their wonderful shops in Preston and Liverpool.

7. London Marathon

Every year we have an amazing team of runners who set out to complete the 26.2 miles that is the London Marathon. 2010 was no exception with a team of 11 raising nearly £15,000 between them.

8. Sophie's Legacy

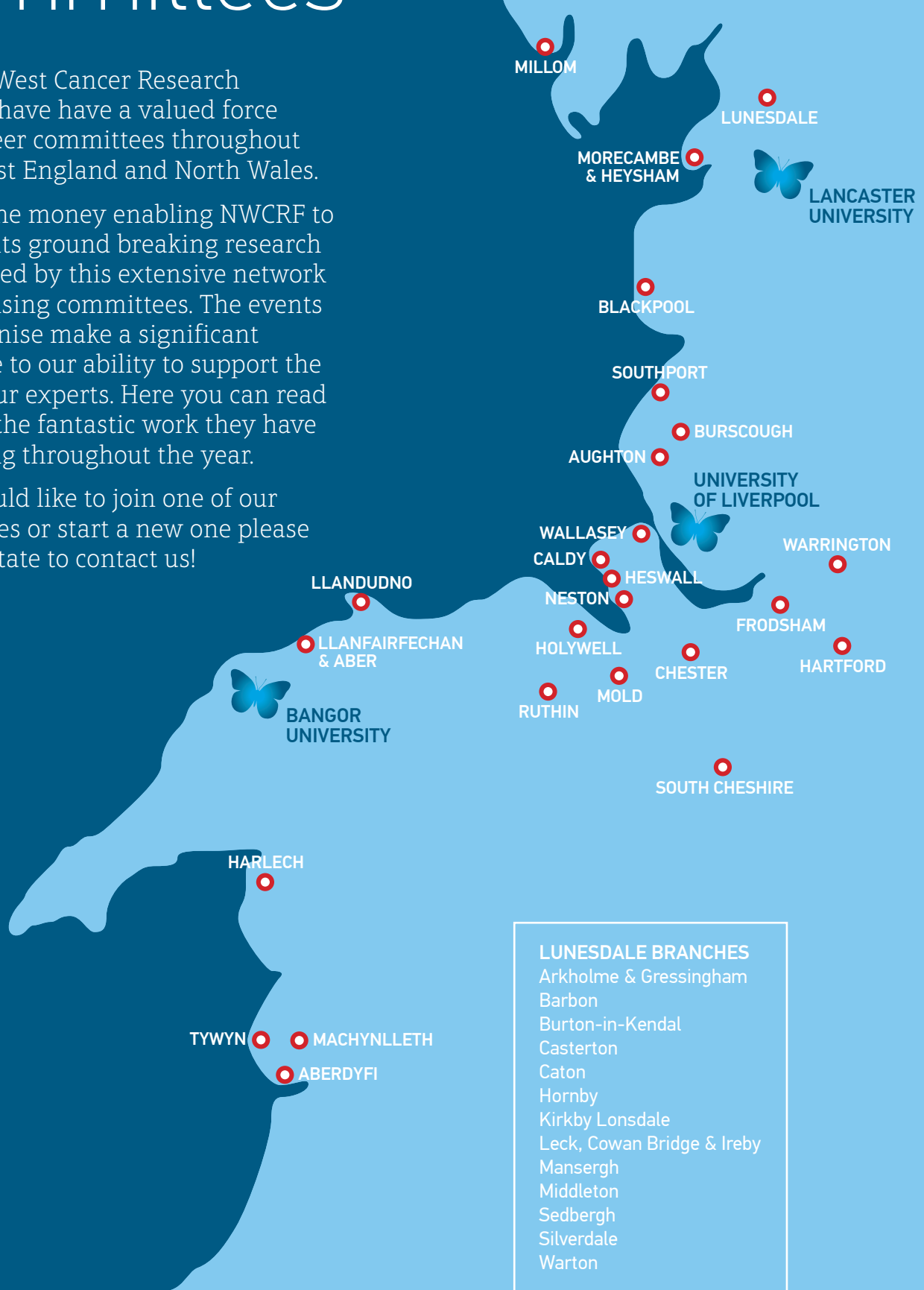
Set up in memory of Sophie Drury who died at 34, Sophie inspired all those around her during her battle with Ovarian Cancer, Sophie's Legacy is an organisation that takes on inspiring challenges in order to improve the lives of cancer patients. Supporting Prospect Hospice, Macmillan and in 2010, North West Cancer Research Fund. An amazing team of 40 competitors took part in a gruelling Mountain Triathlon in the beautiful surroundings of Ullswater in the Lake District. NWCRCF were overwhelmed to receive donations totaling £7,446.89. Our thanks go to Rob Drury and all of the competitors.

Committees

At North West Cancer Research Fund, we have a valued force of volunteer committees throughout North West England and North Wales.

Much of the money enabling NWCRF to continue its ground breaking research is generated by this extensive network of fundraising committees. The events they organise make a significant difference to our ability to support the work of our experts. Here you can read all about the fantastic work they have been doing throughout the year.

If you would like to join one of our committees or start a new one please don't hesitate to contact us!



Committee reports

Our volunteer committees across the North West and North Wales really are the back bone of North West Cancer Research Fund; we cannot thank them enough for their support, enthusiasm and effort.

A selection of our committees have written reports to showcase their fantastic efforts throughout the year, we hope you enjoy reading about them.

ABERDYFI

Aberdyfi have had quite a busy year. Coffee morning, flag day, stall at Christmas Fayre & Rhian's sponsored runs which included 'Race the Train' and the 'Cardiff Half Marathon' have raised a good sum of money.

Gwyneth Roberts

AUGHTON

We started our year with a Coffee Morning at the Aughton WI hut which raised over £600.

In May we had a musical evening at Aughton village hall, with the u3a choir, a string quartet and Susan Black who sang for us, a big thank you to all who performed, especially Susan, a cousin of one of our committee members, who travelled from Shropshire. The evening was a great success raising £735. On the 20th June Marjorie Berry held a Garden Party in her garden in Aughton. Cream Teas were served and we were entertained by a jazz band, over £2,000 was raised at this event.

At the Coffee Evening at Aughton Institute on 21st July with the help of various stands, a raffle and tombola we raised £915.81. On the 29th September a Quiz Night and Hot Pot Supper was held at Aughton Institute and raised £630.10.

This year the Committee have been helped tremendously by Barclaycard, supporting our events with helpers and match-funding, they really have boosted our funds so a big thank you

to all who have helped.

Neil Kinsey Captain of West Derby Golf Club chose NWCRF Aughton committee as his charity for the year.

The events at the golf club were the following, A Fashion Show In March, A Charity Day In August And A Fashion Show in October.

A member of West Derby GC Bill Hunt raised £600 by taking part in The Great North Run.

Carolyn Kinsey

BLACKPOOL

Every Friday during November and December Che Bar Blackpool hosted a competition called "Coin for A Cause". The object was to fill a giant sized champagne bottle donated by Classic Drinks in Merseyside. Contestants made a donation and then had to guess how much money was inside the bottle once full.

This was a successful event with the Candy Honey Show Girls attending on the final night plus raffle altogether raising over £400. We have held a number of Boxing Matches during 2010 with auctions and raffles which our Chair Roger Tretton competed in.

He has fought valiantly and raised awareness at these events, which host around 300 people. We were very grateful to the Aegon team from a local company who raised over £200 with car boot sales, cake stalls and competitions on behalf of NWCRF.

We have continued with our regular collections around pubs and supermarkets but unfortunately we have found people have not been as generous as previous years. However there are plans for future events at a

local pub called the Burlington and a theatre show that will be run through the Blackpool Masonic Lodge.

This year has been a difficult one for our committee because of the current financial climate. We hope to have a better year coming.

Roger Tretton

HESWALL

The Heswall Committee of eight (which has swelled to ten during 2010!) have had a pretty routine year: – Christmas card sales at two venues together with the committee selling to friends and relatives. Five supermarket collections and five weeks of house to house collections has brought in a total of £11,000 for the Fund.

Again with the committee, it is the support of local residents, local businesses and our loyal team of helpers who have all helped to achieve this sum and in doing so, raise the profile of NWCRF. What would we do without them all. Thank you to everyone.

Pat Mann

CALDY

After the rain and gales of the last two years we were due for a fine day in Caldy for the opening of the Secret Gardens of Caldy. On 20th June the sun shone non-stop, the ten gardens looked superb and visitors gave very complimentary comments. Visitor numbers were up 25% on last year (to 430) and our final figure of take was just over the magic £5,000, thanks to some generous late donations. None of this would have been possible without the hard work of our cheerful (most of the time) band of willing helpers. New garden openings give added attraction



1. Laura Kinsey and Derek Cooke from Aughton.

for our discerning garden visitors; so a special thank you to Ann and David Lowry for allowing us to enjoy their beautiful Japanese garden.

John Lewys-Lloyd

FRODSHAM

Yet again our Spring and Autumn Lunches have formed the backbone of our fundraising for this year. Our loyal NWCRF supporters have, once more, shown their appreciation of the effort put in by our committee members.

Stationery sales still continue to do well, particularly in the run up to Christmas.

Our Christmas Coffee Morning always attracts a lot of people, especially the gift and home-made cake stalls.

All in all we have had a good year, lunch functions are hard work, but generate lots of fun and satisfaction.

Jean Stewart

HARLECH

The Harlech Committee of the North West Cancer Research Fund held their Annual General Meeting on 27th October. At this well attended meeting, new members were welcomed by the Chairman, Mrs Joan Powell. In her report on the last year's fundraising events, it was evident that no progress had been made. In fact, even with an increase in donations from unexpected quarters, our revenue was below that of the previous year by about £380.

The debate centered around our image. The local population does not seem to realize that this charity, unlike nationally known charities, serves North Wales and the North West of England. Its fundraising is channeled directly into cancer research at Bangor, Liverpool and Lancaster

Universities.

Further discussion followed to confirm that our main fundraising events in 2011 would be to support an athlete in the Harlech Triathlon on 15th May and to hold a Coffee Evening on 24th June in the Memorial Hall. There are other ideas in the pipeline for later in the year, hopefully with some surprises in store.

Jack Forster

LLANFAIRFECHAN & ABER BRANCH

During 2010 we held several successful events and in February Gina Kent gave a very amusing lecture on the restoration of her 16th/18th Century Welsh Farmhouse at the foot of Snowdon. Ffridd Isaf was derelict for many years when Gina and her husband David started the restoration in 1996, doing all the work themselves. Taking 3 years to complete, the talk told of the building and restoration work and some of the history of the farmhouse. £559 was raised on this winter's evening.

Store collection takings seem to have overtaken Christmas card sales at our Branch with Tesco and Morrisons collections amounting to £1,899, whereas the sales of Christmas cards on the annual stall at Ysbyty Gwynedd plummeted to £659.

'Calendar dates' were sold for a patchwork quilt made by Mrs Pat Adams of Oregon, USA. The spectacular toning patches of red and gold entitled 'Y Ddraig Goch' raised £730. This was a very painless way of raising money.

It was August when, once more, we had Afternoon Tea at 'Talfor' when Margaret Edmonds invited us to take advantage of her beautiful gardens to hold this event and we were able to add £527 to our account.

In the Autumn, Clarins came and demonstrated their skill to a very attentive audience and £289 was raised.

At our AGM in November, Dr Doris Alcock announced that she would be resigning from the Committee. She was thanked for all her hard work over the last 30 years for the NWCRF. It was suggested in our January meeting that Doris be asked to become President of the Llanfairfechan & Aber Branch. We were pleased to learn that she accepted the honour and therefore we will not be losing touch with a valued past member of our committee.

Other officers relinquishing their posts at the AGM were Ann Haynes and Kate Gibbs and they were thanked for their hard work. We welcomed Eleri Lewis as Chairperson and Anona Davies as Secretary. It is hoped that they will enjoy steering the Branch successfully for the next twelve months.

Our plans for 2011 include a Winter Lecture by the new Reserve Officer for the National Trust in Cwm Idwal in the Ogwen Valley, Mr Dewi Davies.

We will hold a month long exhibition of art work donated by local artists entitled 'Visions on North Wales' which will culminate in an Art Auction at Galeri Caernarfon. During the summer months we plan another Afternoon Tea in beautiful surroundings and a BBQ Brunch in the garden of our new Chairperson. Our postmen are even getting in on the act as two of them have volunteered to raise funds for NWCRF when they undertake a 3-Peaks challenge run by the GPO. Hot off the Press is news that the daughters in law of our Chairperson and Secretary, namely Fran Lewis and Rachael Davies, will run in the 'Round Llandudno 10K'.



2. 'The workforce' from Caldly. 3. Cake at Secret Gardens of Caldly.

We are a jolly group of people (as you can see from the photo on the Branch website) who do as much as we possibly can for the NWCRCF.

Anona Davies

NESTON & DISTRICT

I've heard it said that small is beautiful – so our Committee must be quite lovely! One of our longest serving members has just moved into a care home and we shall miss her contribution to the Committee very much. We may be small but we are still determined and this year, despite all the financial problems people have, we have maintained a good level of fundraising. We held our usual Coffee Morning and two Ploughman's Lunches, a collection at the local garden centre and another profitable morning offering a coffee and mince pie at the home of our Chairman and selling lots of Christmas Cards into the bargain. Neston Flower Society has, as in previous years, been very generous with their support to the fund and donated a large sum from their charity account. We were also pleased to be involved again with the Neston Cricket Club who held a past England Players Cricket Match against a Neston side in July. We are most grateful to the Heswall Quilters and Patchwork Group who have crafted and donated a full size patchwork quilt for us to raffle. It is a beautiful work of art. Local businesses, residents and friends of the Committee continue to give enormous support to our small group and without their assistance we would certainly not be able to maintain the high level of fundraising we have achieved again this year.

Myrna Hampson

RUTHIN

We have this year more or less followed the pattern of previous years. Although not very imaginative our programme seems to pay off.

We did, however, have two new items (new to us) of a floral demonstration by a local florist and a quiz, both thought up by Ann Winn, who is now joint secretary with myself. The floral evening was a full house.

Sadly, it is the 'In Memorians' that bring in the money. David's and my son-in-law, Simon, ran the Anglesey Marathon on 26th September again for the North West Cancer Research Fund. We are very proud of him. He came 80th out of 700. We were pleased to host this year's Welsh Area meeting in Ruthin.

Shelagh Jones

SOUTHPORT

2010 has been very pleasing for our fundraising efforts, with all our events well attended by our loyal supporters in Southport and surrounding areas.

Our events included a Festive Food Lunch, a Christmas Coffee Morning, a Bridge Evening, a Luncheon at the Scarisbrick Hotel, a Summer Sparkle, which goes from strength to strength, a Supper Evening, the first we've had, where £1500 was made.

We were lucky enough to be invited to hold the Raffle at the Southport Flower Show and raised over £1700, with Barclaycard sending three lovely ladies who sold the Raffle tickets. At this event we were able to reach a far wider audience than we normally do, thus raising the profile of North West Cancer Research Fund.

Two of our newer members and myself organised a Chinese Banquet and Cabaret, with a wonderful Raffle and Auction raising vital funds with Barclaycard once again attending and selling Raffle tickets for us. We are indeed indebted to Barclaycard for matching £750 for each member of Barclaycard in attendance at our events.

Special thanks to Mary Lomax, one of our members who runs a Luncheon Club and has raised almost £1800 for our branch this year.

We have a wonderful Committee who work hard, but enjoyably, in helping at all of our events. I do have to thank our Treasurer Shirley Allan and Roy her husband for compiling our end of year accounts, and to our newer members who are enthusiastic and most helpful.

Thanks also to Jackie Jaeger who minutes all of our meetings. So we take heart in knowing we are still a very high profile Committee in Southport, with loyal and understanding supporters of our cause. We remain very upbeat and know that the public are discerning in what they can give to any one charity.

A big thank you to all the Committee and our President Joan Pettitt, who attend, organize and give Raffle prizes and their time so freely.

We are a great team and thank you for making my job so easy. Thanks also to Anne, Sandra and Lucinda who are all so helpful in Head Office. Nothing seems to be too much trouble for them.

At the end of the day it's all down to Team Work.

Olive Cutts



4. Georgina from Llanfairfechan.

TYWYN

Our first fundraising event of 2010 was our Annual Flag Day collection held during the Easter Monday Fair -a cold day but a collection of £561 was made, including a popular local band performing on our behalf called 'Revival'.

Our next event was the Coffee Morning-what a morning, we've never seen so much rain in May! but we managed to collect £737.

Our final event was a Car Boot Sale on the August Bank Holiday raising £211 on the day. Our final total collected was £1771.58 including collecting boxes in local shops and in homes.

Catherine John

WALLASEY

We are delighted to report another wonderful year of fundraising at Wallasey. Our year starts with the Christmas Fair which proved yet again a great fundraising event. The photo shows Lyn, entering into the spirit of Christmas at her very prosperous Tombola stall.

Our super craft team, led by Val Roberts, produced a wonderful array of handmade craft, which went down well with the visitors. We also had an amazing selection of cakes, pastries and preserves, and the Fair was attended by the Mayor and Mayoress of Wirral, which is always a grand occasion.

Grateful thanks are again extended to Ann Taylor, the owner of Peggy Perkins who contributed very generously with donations via her fashion shows and her hat hire

business and who later held a Fashion Show for us at Wallasey Golf Club, in great surroundings with a wonderful atmosphere.

Our Coffee Mornings continue to be very popular with excellent local support. We have been very fortunate in having two collections at the Cherry Tree Shopping Centre this year, both events greatly supported.

In June we held a "Strawberry Bubble" at New Brighton Cricket Club, this was a lovely occasion with Strawberries and Champagne. Many thanks to Zegers for their support.

On a sadder note one of our Past Chairmen, Mrs Peggy Mitchell Jones died. Peggy will be greatly missed by everyone. Sheila Mallard, a friend of the fund, put on a very successful Christmas Coffee Morning at her home. Val and Geoff Roberts celebrated their fiftieth wedding anniversary and instead of presents asked for donations to the fund, this was a wonderful amount.

The Chairman of the Committee, Doreen Sands, was also Lady Captain at Wallasey Golf Club and throughout the year charity events raised a great amount for the fund. Each year we try to have a coach trip, this year it was to Boundary Mill and everyone enjoyed the outing, coming home with bags of goodies.

Rosemary Griffiths

MOLD

Despite the poor economic situation during the past year we managed to hand over the sum of £30,000. We are so fortunate to have so many supporters

who are prepared to organise functions on our behalf and raise large amounts of money

As always we are extremely grateful to the golfing community. Paul Bentley of Old Padeswood Golf Club presented us with a cheque for £6,000, the proceeds of his annual Golf Day. We are so appreciative of what Paul does for us year by year. He is just so modest and doesn't welcome a fuss.

Another good golfing friend to us is Ron Owen. Year by year, for many years, he has donated a share from his Charity Golf Tournament. This year it amounted to £850.

Barbara Moore organises a Coffee Morning annually. We share the proceeds with Breast Cancer and this year our share amounted to £200. We are very grateful to Barbara who is herself recovering from surgery for cancer. We wish her well.

The Bistre Cub Scouts did a sponsored walk and donated the proceeds of £369.56 to our Fund. It was lovely to go along to their meeting and witness their enthusiasm for the cause. They lost one of their leaders to cancer.

The Gwynedd CP School at Flint spent some time bag-packing in the supermarket and presented us with a cheque for £377. We are grateful to them for their gesture.

We received £760.66 from the Alun High School. This was raised through sponsorship. We are particularly grateful for the last three donations which all came from young people. We must try to encourage them to take an interest in fundraising. They are the future of the fund.



5. Alison, Pat and Chairman Joan from Holywell. 6. Holywell fundraising day.

One of our young committee members, Louise, organised a Christmas Shopping Evening. It was a big undertaking and Louise has learned a great deal from it. She raised £345 and found that there is great potential in the event but it needs lots of organising assistance. Of course Louise also runs our 300 Club which raised £2,779 last year. We are very grateful to Louise. It entails a lot of work. Graham at our local hotel welcomed us there for a Buffet Supper at £15. The food was delicious and the atmosphere warm and friendly and as a result we raised £634. We are grateful to Graham for his hospitality and generosity.

Heidi and Dave, two young friends of the Committee held an Art Evening in Chester. This raised £361.83. I am so grateful to Heidi and Dave for their support.

Judith, one of our 'young ones' on the Committee hosted a Coffee Morning in her beautiful home and raise £612.50. Judith has been through the mill, having lost her hair after chemotherapy. However, she is positive and very hard working. We appreciate what she does.

Last, but not least, we have Pat and Colin Werner who this year raised over £2,000 with their Dog Training Event. We were privileged to have been their chosen charity again. It is a pleasure to be amongst these people and their well-trained dogs. We spent two half days with Pat, Colin and their 'students'. I guess their gift of discipline would be a winner in some schools! They welcomed the committee, providing coffee and cakes during our stay.

The silence that falls when the dogs are doing their work is almost uncanny. They sit for long periods without moving. They go, at their owner's

command, to pick up a number for bingo etc. We are truly appreciative of all that Pat and Colin have done for us over the past years.

The Committee have, as always, worked very hard throughout the year. The 'oldies' are blending in well with our young members. We have the knowledge and they have the energy!

We have held our usual House to House and Street Collections. We ran a Raffle in our local Co-op and followed it up with a morning on the market. As well as our normal Coffee Mornings we held a special one in a different venue and raised almost £1,000.

The young members and their family were very enthusiastic and it turned out to be a most enjoyable morning as well as being financially successful. We held our usual Luncheon which brought in almost £1,000 too. A very busy year.

My thanks to everyone who contributes to our success.

Beryl Powell, MBE

SOUTH CHESHIRE

During the year we held two events. The Cholmondeley Run on Sunday 18th April and the Cholmondeley Summer Drinks Party on the 15th June. The Run happened on a beautiful day and the volume of people who came surpassed any previous year. There were 239 runners in the 10 kilometre run and 206 Fun Runners.

The committee were quite stretched but it all proved to be well worth it as the event was a huge success and we made £4,680.16.

The Summer Drinks Party in Cholmondeley Castle was also a success. We had a very interesting talk

by Lindsay Evans the subject being Eccentrics in Welsh Country Houses.

This was followed by drinks and delicious canapés out on the terraces of the castle with a Raffle looking at the magnificent views; it was a cold but a clear evening. The profit from this event was £2,245.65.

The total sent to Oxford Street was £6,500; plus £1,001.13 which was sent direct this makes a total of £7,501.13. Our Patron, Lady Cholmondeley has not been well since Christmas so we wish her a very speedy recovery.

The South Cheshire Committee relies very much on the beautiful venue of Cholmondeley Castle for many of their fundraising events and we are very grateful..

Primrose Dewhurst

HOLYWELL

In fundraising terms, this year for the Holywell Branch has been exceptional despite the difficult economical times.

The excellent financial year has however been overshadowed with sadness when our much loved Secretary Colette Hall passed away. Colette bravely fought cancer over several years whilst at the same time dedicating herself to fundraising for the cause. We miss her presence and personality.

Donations in Memory of Colette raised £2,145. Donations from other bereaved families raised £440.50.

Wendy Watts, an active Committee Member, raised an unbelievable £1,100 from an impromptu school reunion – enjoyed by all, well done Wendy.

As usual fundraising began in November 2009 with a Coffee Morning



7. Mary Shepherd from Lunesdale.

and the sale of Christmas Cards. This event contributed £543.20.

This was followed by an evening for Members, their families and friends at the local Pennant Golf Club producing £923. Collections at our local Tesco store have raised £653 this year. We thank the Tesco Management Team for their support.

In spring this year Simmi, a fashion boutique based in Mold entertained us with a Fashion Show. The £786 raised gave a good start to 2010.

Janet Hill, daughter of Treasurer Margaret Hill, held a Fundraising Day in her immaculate gardens at her home near Bodfari this summer.

Janet, her friends and Committee Members worked extremely hard preparing stalls, champagne and Pimm's bar, jewellery stall, a bouncy castle and many other attractions including children from Denbigh Stage Coach and Holywell Town Band. The event was a great success and raised £2,615.

Astley and Jill Jones celebrated their Ruby Wedding and donated a generous £300.

Our regular contributors over many years have once more responded magnificently. Chris Hall again ran the London Marathon raising £2,012. Alan Robertson promoted once more a Golf Day at Holywell Golf Club.

Assisted by his wife and Members of the Golf Club Committee they raised £4,080 in total our share being £2,040. Their contributions are greatly appreciated and rounded off the year in grand style.

All together the Holywell Branch raised an impressive £13,912.

Many thanks to all who have contributed to the Fund throughout

the year many of whom have not been mentioned by name.

Finally the Holywell Committee would like to thank the Oxford Street Team for arranging the annual meeting in Ruthin and their support for our Branch.

Margaret Hill

LUNESDALE

I think we could say the highlight of 2010 was Mary Shepherd's Parachute Jump in early May. We are sure her final total will be over £3,500.

I was able to go and watch her descend from the clouds having been taken up in the plane strapped to a hunk of a man to a height of 1600 feet. Normally no one over 65 is accepted to jump, but this jump was to celebrate Mary's 80th Birthday in November.

Annie Carrington ran for us in the London Marathon for the second time and did a faster time. Well done Annie.

Our village events have done as well as ever, and I have been able to go to most of them. Congratulations to all of you for working so hard. We were very sorry to hear of the death of Mrs Daphne Wilson of Rigmaden. She was 98, and started the NWCRF in the Lune Valley.

She loved to hear what we were doing, and her mind was as sharp as ever right to the end.

We also lost Myles Bateman, the husband of Dorothy our Warton representative. He always supported Dorothy and we got to know him well over the years.

We had our usual October meeting at Tunstall when Jane Owen-Lynch from Lancaster University came and talked to us. We were very grateful that Jane

gave up her time for us, and we feel it keeps us in touch with the Research going on at the University which is a great encouragement to us all when fundraising.

We were very pleased to see John and Ann Lewys-Lloyd who give us so much of their time.

We also appreciate the team at Oxford Street who work so hard on our behalf. I can't end this report without thanking all my team, especially Mary Shepherd who keeps me on the straight and narrow!

Olivia Ley

Scientific

The NWCRF Scientific Committee is comprised of renowned cancer researchers with lay members from within North West Cancer Research Fund.

We have two grant application deadlines each year and these are 1st April and 1st October. On average we receive 30 applications per year.

The applications are subject to peer review; firstly assessed by external reviewers and then by the Scientific Committee members. Each member of the scientific committee is allocated a number of applications on which he/she will lead the discussion.

At the end of each discussion the members score the application between one and five, one being the lowest and five being the highest. A minimum average score of 3.5 is required for funding.

Whether or not an application is funded also depends upon the resources available at the time.

The grants awarded are subject to satisfactory review at the end of the first and final year.

NWCRF SCIENTIFIC COMMITTEE MEMBERS 1/11/09 – 31/10/10

Professor Malcolm J Jackson, University of Liverpool (Chairman). Professor Viki Allan, Faculty of Life Sciences, University of Manchester. Professor Francis Barr, NWCRF Professor, Cancer Research Centre, University of Liverpool. Dr Michael J Cross, School of Biomedical Sciences, University of Liverpool. Dr Nigel J Jones, School of Biological Sciences, University of Liverpool. Professor Dennis McCance, Cancer Research & Cell Biology, Queen's University Belfast. Dr Jürgen Müller, Warwick Medical School, University of Warwick. Dr Jane Owen-Lynch, Department of Biological Sciences, Lancaster University. Dr Simon K Whitehall, Institute of Cell & Molecular Biosciences, University of Newcastle.

LAY MEMBERS

Mr John C Lewys-Lloyd, NWCRF (Chairman). Mrs Helen E Dring, NWCRF (Vice Chairman). Mrs Anne Jackson, NWCRF (Chief Executive Officer). Mrs Sandra Brown, NWCRF (Finance and Communications Manager). Mrs Pam Neagle, Research & Business Services, University of Liverpool. Mrs Tracey Ricketts, Secretary, NWCRF Scientific Committee, University of Liverpool.

Scientific Committee Chairmans Report



I am delighted to introduce this Annual Report of the Scientific Committee of North West Cancer Research Fund. As many supporters of the Charity will know, this is my second period as Chair of the Scientific Committee having last served 7 years ago.

My role now, as it was then, is to ensure that the charity receives the best advice in evaluating the scientific quality and relevance of the applications for funding that we receive and to advise NWCRF on the scientific strategy that it should follow.

The Scientific Committee comprises senior cancer researchers from institutions in the North West and beyond and together we are working to ensure that the money raised through the Fund is devoted to truly deserving projects, addressing significant topics which further our understanding of this disease.

We continue to make sure that all proposals received by the Fund are reviewed to the highest international standards by scientists and clinicians from many institutions in the UK, Europe and North America, prior to consideration by our Scientific Committee.

As many of you will know, NWCRF aims to support research into the causes of cancer and much of the work we support is providing fundamental insights into the origins of cancer which will, in the future, assist both the prevention and treatment of these diseases. The research that we fund is complementary to that which is funded by other larger funding agencies such as the Medical Research Council or Cancer Research UK and fills a crucial role by allowing bright young researchers in the North West and North Wales to obtain initial

funding for their research and to develop their ideas. It also fills a crucial role in providing funding for initial basic science research that can identify novel interventions that may eventually be tested in large clinical studies and trials funded by the larger agencies.

The process of applications and approval of funding for research projects by NWCRF is very competitive and less than 25% of the applications that we receive are successful. NWCRF is a member of the Association of Medical Research Charities (AMRC) which provides external recognition of the quality of our peer-review processes and ways of allocating research funding and it places us in the top tier of medical research charities in the UK.

This Annual Report summarises the research programmes funded by NWCRF in several institutions across the region. All of our researchers are contributing to the scientific knowledge in this area.

In these accounts, you will find examples of the impact that our funding is having in helping identify key pathways involved in how cancers occur, how cancers spread and grow and in highlighting key steps in these processes at which it may be possible to disrupt the cancer growth and/or spreading. These reports have been written by the researchers themselves, and we hope that you find them both interesting and informative.

I should also like to use this opportunity to thank my immediate predecessor as Chair of the Committee, Professor John Caldwell for his work on behalf of the Charity.

John oversaw many important changes in the working of the Committee including those necessary to ensure AMRC membership. I would also like to thank the members of the Scientific Committee, particularly those from outside our region, for their help in ensuring NWCRF advance cancer research in the North West and North Wales.

Although there are considerable advances in many areas of cancer research, there still remains a lot to do in order to improve our ability to prevent, detect, and treat many forms of cancer.

The achievements of NWCRF so far and our future success are due to all those who work to raise the funds distributed by the Scientific Committee and enable this important research to grow.

PROFESSOR MALCOLM J. JACKSON
Chairman, NWCRF Scientific Committee



The University of Liverpool restructured its Faculty of Health and Life sciences in 2010 to bring together the cognate areas of medical, biomedical, veterinary and biological sciences research into 5 research Institutes that reflect focuses of research strength and development.

These are the Institutes of Ageing and Chronic Disease; Infection and Global Health; Integrative Biology; Psychology, Health and Society; and Translational Medicine.

Cancer research is a key priority in 3 of these 5 Institutes: Integrative Biology; Psychology, Health and Society; and Translational Medicine. Cancer research in the Faculty spans a wide range of research expertise that ranges from clinical activity at one end to fundamental biology at the other. The Faculty hosts research funded by NWCRF and by many other research funders including the Liverpool Cancer Research UK Centre.

The University currently has 14 project grants funded by NWCRF, is host for the North West Cancer Research Fund Chair of Molecular Oncology (Professor Francis Barr) and NWCRF also provide some funding to help newly qualified clinicians begin a career in cancer research by taking a Masters in Research (MRes) course in Biomedical Sciences specialising in Cancer Biology.

The focus of the NWCRF-supported project grants is on basic research into the causes and potential treatments of cancers and Professor Barr's own research will help the rational identification of novel anti-cancer drug targets by understanding the basic biology of cell growth and division.

Basic studies to identify novel approaches to therapy and intervene in cancer growth and development are a major component of the NWCRF-funded work in Liverpool and these include the work of Professor Christopher Foster and Youqiang Ke that is primarily targeted at Prostate Cancer and that from the laboratories of Dr. Michael Cross and Ian Prior which may provide fundamental insights into potential therapeutic approaches for several types of malignancy.

NWCRF also fund a substantial number of studies that seek to understand fundamental mechanisms controlling the growth and spread of cancers. This immensely important area includes the research of Professor Philip Rudland and Roger Barraclough targeted at breast cancer, Professor Jon Rhodes and Dr. Lu-Gang Yu that is relevant to both breast and colon cancer and Professor Bertil Domato and Dr Sarah Coupland aimed at uveal melanoma.

Further NWCRF-funded studies examining the basic mechanisms by which cancer cells spread are undertaken by Dr Alex Simpson and Dr. Daimark Bennett.

The remainder of the projects funded in Liverpool by NWCRF address fundamental mechanisms of how cancer occurs and include research targeted at breast, lung, brain and

bowel cancer from Dr Judy Coulson, Dr. Sylvie Urbe, Prof Mark Pritchard and Prof Andrea Varro.

All of these research projects are described in more detail later in this Annual Report. These projects compliment clinical and other basic studies that are funded by other agencies and ensure that the University of Liverpool contributes significantly to scientific and medical progress against cancer.

The University retains an international reputation for the quality of its research in this area and the continuing support of the North West Cancer Research Fund helps us maintain and build on this reputation.



Bangor University has seen significant managerial changes over the last year, with the appointment of a new Vice Chancellor and Pro Vice Chancellor Research. NWCRF group leaders are actively involved in university-wide discussions about future medical developments in Bangor.

General news: Over the last year, the NWCRF Institute in Bangor has seen several positive developments. All the groups have now moved and share a single floor in the Brambell Building, greatly aiding the sharing of research resources and ideas.

Bangor University has seen significant managerial changes over the last year, with the appointment of a new Vice Chancellor and Pro Vice Chancellor Research. NWCRF group leaders are actively involved in university-wide discussions about future medical developments in Bangor.

We have strengthened our links with clinical oncology, and have welcomed Prof. Nick Stuart (Professor of Cancer Studies, School of Medical Sciences) into our Institute. We have also welcomed Mr John Sammut (Clinical Lecturer, School of Medical Sciences), who has obtained a prestigious Clinical Academic Training award to perform research in collaboration with Dr. Jane Wakeman, Dr. Ramsay McFarlane and Prof. Nick Stuart.

In 2011, we are organising an Open Evening, as part of the Bangor Science Festival, which will allow us to present our work to the local community and strengthen our links with local fundraisers. Dr. David Pryce and Dr. Ramsay McFarlane have developed a highly successful MSc programme that enables post-graduate students to develop and utilise cutting edge

molecular research skills to investigate key aspects of the fundamental causes of cancer.

Dr. Jane Wakeman's group continues to study the role that developmental genes play in cellular changes at the edge of colorectal tumours, which allow the tumour to invade surrounding tissue and migrate to new sites within the body.

This movement of cells is a major cause of death from cancer. Jane's group is also studying the link between the tumour cells that are able to migrate and cells that cause resistance to therapies, studying if these cells belong to the same population.

Centromeres are essential for the reliable transmission of genetic information during mitosis, and defective centromere function can lead to chromosome instability and cancer. Dr. Ramsay McFarlane has postulated and published, jointly with a collaborator from Oxford, a novel role for recombination in the maintenance of centromere structures.

Ramsay's group has also identified a possible role in epigenetic regulation for the leukaemia-associated proteins Translin and TRAX. The completion of the first phase of an in silico pipeline for the identification of new members of a family of cancer markers has identified approximately 200 new candidates. This research

project has resulted in a new research programme, jointly with the NHS (together with Prof. Nick Stuart), and has attracted additional funding from the NWCRF.

Edgar Hartsuiker has been expanding his group and is continuing his research into the contribution of DNA repair mechanisms to resistance against clinically important cancer drugs.

Over the last year, in collaboration with groups in Japan, Sweden and the UK, Edgar successfully contributed to publications in "EMBO Journal", "PLoS Genetics" and "Cell".

Edgar has also attracted a prestigious 5 year Career Establishment Award from Cancer Research UK to study DNA repair mechanisms that contribute to resistance against topoisomerase inhibitors (e.g. Irinotecan, Topotecan and Etoposide, VP16). Edgar has recently been awarded funding from the NWCRF, to study the role of DNA repair in the resistance of cancer cells to another group of clinically important cancer drugs, the nucleoside analogues.

Edgar has employed 2 postdocs and a research technician to work on these projects.



Lancaster University is continuing to develop the cancer biology research theme within the new School of Health and Medicine which recently celebrated its 2nd birthday. The School, which brings together cancer researchers across the three divisions is opening up exciting opportunities for collaborative and interdisciplinary cancer research.

Some of this research is already being supported by NWCRF. The number of research groups within the cancer biology research theme has nearly doubled since I moved to Lancaster in 2006 though one recent appointment to the School will not be too unfamiliar.

Last year Dr Sarah Allinson completed her highly successful North West Cancer Research Fund Fellowship and was appointed to a Lecturership in Biomedical Sciences. Sarah is continuing to develop projects investigating DNA repair and stress response pathways as well as work addressing the mechanisms behind cancers induced by exposure to environmental heavy metals.

My own research on DNA damage response pathways has also greatly benefited from support by NWCRF. The award of a project grant in 2008 as I was establishing my laboratory at Lancaster enabled us to identify a role for the MRN complex in an alternative DNA end joining pathway.

We are continuing to elucidate the molecular mechanism of this DNA repair pathway, as well as embarking on a recently awarded NWCRF project grant. In collaboration with Dr Clive Price we will be using a combination of biochemical and genetic approaches to investigate and characterise a novel factor involved in maintaining genome stability.

In further work funded by NWCRF Dr Ed Parkin's group is continuing to investigate the relationship between Jagged 1 protein and the progression of prostate cancer. Ed's group have identified the mechanism that leads to release of Jagged 1 from the cell membrane and demonstrated that the soluble Jagged 1 protein can stimulate the growth of prostate cancer cells. Ed is now extending this work to investigate the role of copper in regulating this process.

Dr Karen Wright and Dr Rachel Rigby both joined the School in 2008 and are interested in the underlying causes of inflammatory gastrointestinal diseases such as ulcerative colitis and Crohn's disease, known risk factors for colorectal cancers. Karen is studying the growth of intestinal epithelial cells under conditions that mimic those found in the gut lining and how this affects the sensitivity of cells to cannabinoid compounds.

Rachel is studying the influence of commensal bacteria on the repair and renewal of intestinal epithelium through regulation of the tumour suppressor gene SOCS3. Dysregulation of these process is thought to contribute to the development of colorectal cancers.

The most recent addition to the cancer research team is Dr David Clancy, a *Drosophila* (fruitfly) geneticist who

is interested in the way that cellular repair processes degenerate during the ageing process and how this can lead to the development of cancer.

The School now boast a portfolio of cancer research exploiting a range of experimental models, from yeast and fruitfly through to amphibian and mammalian systems.

This diversity is contributing to a lively and vibrant environment for cancer research at Lancaster.

The future of cancer research at Lancaster is looking bright and the cancer biology research group would like to acknowledge the support from NWCRF and the fantastic efforts of the fundraising committees and volunteers that are helping to make this exciting work possible.

DR HOWARD LINDSAY

*Lecturer in Biomedical Sciences
School of Health and Medicine
Lancaster University*

How to apply for funding

Application forms can be downloaded from our website www.nwcrf.co.uk or alternatively please email research@nwcrf.co.uk

1. Grants are provided by the North West Cancer Research Fund to support fundamental research into the causes of cancers and the mechanisms by which they arise and exert their effects. The current strategy is not to fund research whose primary aim is to develop new forms of treatment or evaluate existing ones e.g. drug development, clinical trials. The research must be carried out in the North West of England, North or Mid Wales (Cumbria, Lancashire, Merseyside, Cheshire, North Staffordshire, to the west of a line drawn from Appleby to Bolton to Newcastle-Under-Lyme and North and Mid Wales to the north of a line drawn from Newcastle-Under-Lyme through Welshpool, Market Drayton and Machynlleth). All research project grant applications are evaluated in the light of external peer review.
2. Applications must be limited to 2,000 words. Relevant papers in press or submitted should be included as an appendix.
3. Applications must be submitted by one of the following deadline dates: April 1st and October 1st. They will be considered by the North West Cancer Research Fund Scientific Committee approximately 8 weeks later. Late applications will not be considered and will be held over to the following meeting.
4. Applications to be submitted to NWCRF, 22 Oxford Street, Liverpool L7 7BL. One original copy is required and, in addition, an e-mail pdf copy should be sent to research@nwcrf.co.uk
5. Consideration will be given for financial support for:
 - a. Research Project Grants: This is the normal mode of research support. Project grants are normally awarded for a period of 3 years and are subject to a satisfactory progress report a full twelve months after the award. The progress report should consist of a report on the progress of the project together with a restatement of the resources required for the remaining period. Project grants may be provided to support students undertaking research in cancer leading to a higher degree.
 - b. Reginald Bellis Bequest: A sum of approximately £900 is available annually to support postgraduate travel to other research centres for collaborative work or other purposes relevant to cancer research.

We currently give grants ranging from £750,000 to £1,000,000 a year to finance research at the University of Liverpool, Lancaster University and Bangor University. All are initially reviewed by our Scientific Committee and external referees to ensure they are worthwhile and will add to the bank of knowledge on cancer research.



The Role Of USP15 In Reversible REST Ubiquitination In Cancer

Investigating how a master regulator is controlled in cancer cells

DR JUDY COULSON, DR SYLVIE URBÉ, DR MONICA FARONATO
DEPT OF CELLULAR AND MOLECULAR PHYSIOLOGY, INSTITUTE OF
TRANSLATIONAL MEDICINE, UNIVERSITY OF LIVERPOOL
CANCER CONCERNED: LUNG, BRAIN, BREAST CANCER

Cancer cells are characterised by a loss of control of normal cellular processes. This may be caused by genetic changes (in the DNA sequence of genes) or by epigenetic changes that affect the way those genes are switched on or off. This switching on/off is co-ordinated by transcription factors, which bind to the control region of genes.

Each control region can bind many different transcription factors and, depending on which are present, the net effect will be to turn that particular gene on or off.

Alterations in the amount or activity of transcription factors in cancer can lead to inappropriate switching on/off of many different genes and hence to the incorrect production of many proteins that control normal cellular processes. REST is one such transcription factor, which has binding sites in the control regions of

hundreds of genes, and acts to switch off these genes by causing epigenetic changes. The amount of REST is altered in some cancers causing inappropriate expression of many genes. REST is required for normal function of many cells of the body where it acts as a tumour suppressor, however REST decreases in some lung and breast cancers; removing this off-switch allows cancer-promoting genes to be switched on.

In contrast, the amount of REST needed for the normal function of brain cells is very low, but REST increases in some brain cancers, switching off cancer-protective genes.

Ubiquitin is another example of an on/off switch that controls important events in cells, such as growth. When ubiquitin is stuck onto proteins it can decrease their amount in the cell. However ubiquitin can also be unstuck from proteins to increase

their amount. It operates a little like a see-saw, add ubiquitin to one end of the see-saw and it gets heavier and lowers, but take the ubiquitin off and it gets lighter allowing the balance of the see-saw to be restored.

As the amount of REST may be abnormally increased or decreased in different types of cancer cells, we are interested in characterising the enzymes that signal for ubiquitin to be stuck onto, or unstuck from, REST. An enzyme was recently identified that adds ubiquitin onto REST causing its levels to fall, and we have now identified USP15 from a screen of 84 enzymes as a candidate that could remove ubiquitin and so act to restore the level of REST. We are characterising how USP15 regulates the abundance and function of REST and investigating whether the ubiquitin on/off switch behaves abnormally in cancer cells.



Understanding The Role Of The Mre11/Rad50/Nbs1 Complex In Microhomology-Mediated End Joining (MMEJ)

Understanding the way the Mre11/Rad50/Nbs1 (MRN) complex contributes to the repair of DNA double strand breaks

DR HOWARD LINDSAY, MR ANTONIO BONIS, DR ELAINE TAYLOR
HEALTH AND MEDICINE, LANCASTER UNIVERSITY. *CANCER CONCERNED: ALL TYPES*

One of the worst forms of damage incurred by the genome is breakage of both strands of the DNA molecule. DNA double strand breaks (DSBs) can result in the loss of DNA fragments or, if repaired inappropriately, lead to chromosome translocations and other forms of genome instability that are prerequisite for cancer development and progression. Unsurprisingly

cells have developed a range of mechanisms to repair DSBs. The most frequently used form of DSB repair in humans is non-homologous end joining (NHEJ), in which the two broken DNA ends are simply held together while the break is sealed. The Mre11/Rad50/Nbs1 (MRN) complex has various well characterised roles in maintaining genome stability and

in DSB repair in particular, however the contribution of MRN to DNA end-joining remains poorly understood. The NWCRF is currently funding our work to elucidate the role of the MRN complex contributes in NHEJ and alternative end joining pathways. Using cell-free extracts made from the unfertilised eggs of the frog

Xenopus laevis and defined DNA templates we are able to recapitulate DNA end joining in the test tube. We have shown that removal of the MRN complex from egg extract prevents the accumulation of specific repair products, indicating a role for MRN in an alternative end joining pathway distinct from classical NHEJ.

Our observations provided the first biochemical evidence for the involvement of the MRN complex in the microhomology mediated end joining repair pathway, that utilises short regions of complimentary sequence at the break site to direct repair (Taylor et al 2010).

Antonio Bonis, the NWCRF funded PhD

student working on this project is now extending this work to understand the contribution of the individual MRN components in MMEJ. In order to do this, Antonio has developed a series of reagents that enable him to express and purify recombinant MRN complex from insect cells.

This approach is allowing Antonio to generate MRN complexes where key activities of the individual components are inactivated (e.g. the nuclease activity of Mre11). These mutant complexes will then be used to determine the contribution of individual MRN activities to DSB repair.

The majority of chemotherapy drugs in current use kill cancer cells by

inducing DNA damage. The eventual development of drug resistance in tumours as they adapt to tolerate the DNA damage presents a significant problem in cancer treatment.

Acquiring a complete understanding of how different DNA lesions are repaired will help us to determine how drug resistance arises and will, as a consequence, lead to improvements in the chemotherapy regimes used to treat a range of cancers.

In addition, this knowledge will aid in the discovery of new drugs that exploit the specific profile of DNA repair defects in individual tumours.



Investigation Of The Mechanisms By Which Progastrin Promotes Colonic Carcinogenesis

We are investigating how the hormone progastrin promotes the development of bowel cancer.

PROF. MARK PRITCHARD, PROF. ANDREA VARRO, DR CARRIE DUCKWORTH
DEPARTMENTS OF GASTROENTEROLOGY AND MOLECULAR AND CELLULAR
PHYSIOLOGY, INSTITUTE OF TRANSLATIONAL MEDICINE, UNIVERSITY OF LIVERPOOL
CANCER CONCERNED: BOWEL

Colon (bowel) cancer is currently the second most common cause of cancer-related death in the UK. Although surgery is a very effective treatment for bowel cancers which are detected early, the chances of cure are much lower when these tumours are diagnosed at a later stage.

Understanding the biological mechanisms responsible for colon cancer development is therefore important and we hope that this approach will eventually lead to improvements in the diagnosis and treatment of this tumour type.

During this project, which is currently nearing completion, we have studied the ways in which one specific hormone called progastrin affects the development of bowel cancer. Researchers have in the past shown that increased levels of this hormone are frequently found in the tumour and blood of patients who have bowel cancer.

One of the main ways in which progastrin appears to promote tumour growth is by causing colon cancer cells

to divide more quickly. In a previous NWCRF-funded project (Grant CR 544 which ran from 2000-2004), we studied in considerable detail the mechanisms by which progastrin makes colonic epithelial cells (the cell type from which bowel cancers actually develop) divide more quickly. This work was published as three papers in the journals *Gastroenterology* and *American Journal of Physiology*.

In the current project, we have investigated whether progastrin also regulates other important cellular processes in the colon, in order to promote cancer development in this tissue. We have demonstrated that progastrin regulates the ways in which colonic epithelial cells acquire specialised characteristics, such as the ability to secrete mucus and produce intestinal hormones (a process known as differentiation).

We published the results of these studies in *American Journal of Physiology* in 2009. In addition, we have shown that as well as acting on epithelial cells, progastrin also affects the behaviour of another key cell

type in the colon, the myofibroblast. We have shown that progastrin causes myofibroblasts to divide more quickly when grown in tissue culture and also that increased numbers of myofibroblasts are found in colonic tissue samples when there is a high concentration of progastrin in the bloodstream.

As myofibroblasts are known to release various substances which can increase tumour growth, we think that progastrin may partly regulate colon cancer development indirectly as a result of altering the behaviour of myofibroblasts in this tissue. These findings may lead to the development of novel approaches for inhibiting the growth of colonic tumours.



Identifying And Charactering Regulators Of Oncogenic Ras Signalling

Identifying inhibitors of mutant Ras signalling

DR. JASMINKA OMEROVIC, DR. IAN PRIOR

BIOMEDICAL SCIENCES DIVISION OF PHYSIOLOGY, UNIVERSITY OF LIVERPOOL
CANCER CONCERNED: ALL TYPES

We are interested in Ras proteins that act as molecular switches in many cell signalling pathways and have important roles in regulating cell growth, cell division and cell death.

Ras mutants that are permanently switched on and over-stimulate downstream pathways are found in 15% of all human cancers. We have found that some cancer cells with mutant Ras have found ways to inhibit this aberrant Ras signalling.

In order to understand this process we have targeted a large family of proteins called phosphatases that are known to play a role in switching on and off signalling proteins. By removing each of this family in turn we have scored the effect on Ras signalling – anything that significantly increases Ras signalling is of interest to us. We shortlisted the most potent phosphatases and

confirmed their role in regulating mutant Ras outputs. Amongst these was a protein called PTEN that is already a well-known contributor to cancer development and the subject of intensive study around the world.

Identifying PTEN in our screen validated our approach and gave us confidence that the other proteins that we identified are also important. In fact we identified several phosphatases that were similarly potent to PTEN and these may ultimately be promising prognostic indicators.

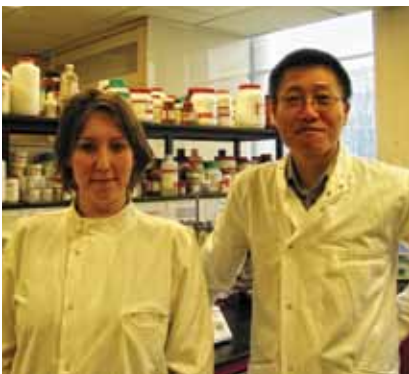
These included PTPRJ and PTPN2, two phosphatases that have previously been linked to different nodes within the receptor-Ras signalling cascade. Our work on this project so far has been recently published [1].

In further work we are examining the role of location in regulating

signalling through this pathway. Specifically we are interested in how movement of the signalling proteins from the cell surface to locations inside the cell allows the engagement of different pathways.

To do this we are using new techniques that allow whole signalling networks to be quantified simultaneously. Our research has revealed hundreds of proteins that respond differently when proper trafficking of signalling proteins is perturbed. Many of these proteins are involved in early signalling events and sorting of signalling proteins at the endosome. We are currently investigating the mechanisms underlying these changes.

1. Omerovic J, Clague MJ and Prior IA. Phosphatome profiling reveals PTPN2, PTPRJ and PTEN as potent negative regulators of PKB/Akt activation in Ras mutated cancer cells. *Biochem. J.* (2010) 426: 65-72.



Investigation of the expression and role of circulating galactoside-binding galectins in cancer cell metastatic spread.

Investigating how cancer cells spread to secondary tumour sites

MS. HANNAH BARROW; PROFESSOR JONATHAN RHODES; DR. LU-GANG YU

INSTITUTE OF INTEGRATIVE BIOLOGY, UNIVERSITY OF LIVERPOOL
CANCER CONCERNED: COLON AND BREAST CANCER

Spreading of cancer cells from primary tumour sites to distant organs is the main reason of cancer-associated fatality. Adhesion to the blood vessel wall of the tumour cells that break up from the primary tumour sites and invaded into the blood circulation is a vital step in this process.

Galectins are a family of 15 sugar-binding proteins that are found in many types of human cells. Earlier studies have shown that the concentration of one galectin member, galectin-3, is significantly elevated in the blood circulation of cancer

patients in comparison to healthy people. For several years, it remained unknown whether this increased circulation of galectin-3 level in cancer patients has any functional implications in cancer progression. Recent studies in our laboratory have revealed that the increased elevation of galectin-3 in cancer patients plays a very important role in promoting cancer cell adhesion to the blood vessel wall hence increases tumour cell spread to secondary sites. Galectin-3 does so by binding to a high molecular weight protein (MUC1)

expressed on the surface of cancer cells. The galectin-3-MUC1 interaction changes MUC1 cell surface localization and exposes several other cell surface proteins that are vital for cancer cell adhesion to the blood vessel bed but are normally hidden on the cell surface by the large size and length of MUC1.

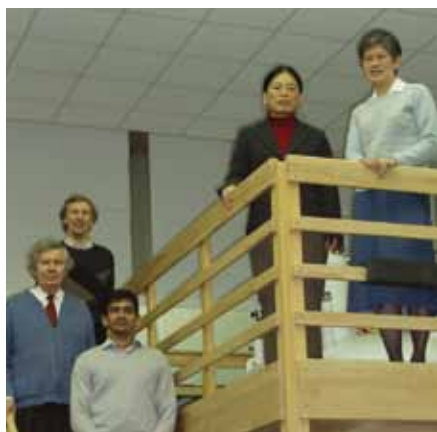
Galectin-3 is one of the 15 galectin members. Until now, the expression and role of the other galectin members in the circulation are unknown. The purpose of this study is to compare the levels of all the galectin members in

the bloodstream of healthy people and cancer patients and to investigate the influence of any potential alteration of the galectin members on cancer cell spreading and metastasis.

We have discovered that the levels of galectin-2, -3, -4 and -8 are all significantly higher in the blood circulation of colorectal and breast cancer patients and patients suffering from metastasis have higher levels

of circulating galectins than those with only localized tumours. We have found that the presence of each of these galectin members can all cause increased adhesion of the tumour cells to the blood vessel wall cells by interaction with MUC1 on cancer cells. The increased concentration of galectin-2 is associated with a significantly increased mortality risk in colorectal cancer patients.

These results suggest that several galectin members are increased in the bloodstream of cancer patients and all likely to play a role in promoting cancer cell spreading to remote tumour sites. Such information could have diagnostic values in predicting tumour cell spreading and also help the development of novel therapeutic agents to reduce metastasis and increase patient's survival.



Structure-Function Relationships in Metastasis-inducing Protein AGR2

Determining the shape of a protein involved in the spread of cancer round the body so that inhibitors of its action can be designed.

DR PRYANK PATEL, DR DONG LIU BARRACLOUGH, PROFESSOR PHILIP S. RUDLAND, PROFESSOR LU-YUN LIAN, AND DR ROGER BARRACLOUGH
INSTITUTE OF INTEGRATIVE BIOLOGY, UNIVERSITY OF LIVERPOOL
CANCER CONCERNED: BREAST

Cancer patients usually die from the cells which have spread in their bodies (metastasis), rather than from their primary cancers.

Thus, there is potential to improve the present, somewhat ineffective cancer treatments by targeting novel therapies towards the metastatic cells in the body. However, it is only recently that key regulators of metastatic spread of cancer have been identified, which could be the potential targets for anti-metastatic therapy.

We recently found that a protein called AGR2 is able to cause non-metastatic breast cancer cells to become metastatic. In addition, we have found that in two independent, large groups of breast cancer patients, those whose cancers contained AGR2 showed a significantly reduced survival.

Interestingly, the presence of AGR2 protein in the cancer cells correlates with the presence of estrogen receptor, which is already known as a marker of good outlook for the patient. Thus, AGR2 might also be a useful marker to help doctors treat patients more effectively, by identifying a group of breast cancer patients who might be expected to have a good outlook, but who do not.

To help us to develop medicines to

stop the action of AGR2, the NWCRF is supporting us to determine the three-dimensional shape of AGR2, using nuclear magnetic resonance in the state-of-the-art University of Liverpool Nuclear Magnetic Resonance Centre for Structural Biology.

Due to the size of the AGR2 protein, the project involves the application of some cutting edge technology, which has now resulted in the determination of the three dimensional shape of the AGR2 protein. In the final part of the project, the details of the structure are being refined, so that we can suggest with some certainty those specific regions of the protein that are important for its activity in cancer cells. These particular regions of the protein will become the targets for the development of strategies to inhibit its metastasis-associated activities.

We are interested in AGR2 protein because it is a newly-identified protein, which has recently been shown to be a mediator of developmental and regenerative processes in simpler organisms.

However, in mammals, AGR2 protein is not widely expressed in normal tissues, but seems to be associated with the secretion of mucous proteins in some specialist glandular cells in the intestine, thus, it is likely

that inhibition of its activity in the metastatic cancer cells will have fewer side effects than the current treatments for advanced cancer.



Figure shown: The three-dimensional monomeric structure of AGR2 protein.

Focus on Researchers



David Pryce

Researcher at the
NWCRF institute
Bangor University

Place of birth: Huddersfield

BSc honours Biomolecular Science, Bangor University

PhD, Bangor University

DAVID'S EDUCATION

I attended University College London in the early 1980s, but due to a close family member developing cancer, was unable to complete my initial studies. In 1999 I returned to scientific research at Bangor University, and in 2004 was awarded my PhD for studying a specific aspect of meiotic 'hotspot' recombination.

DAVID'S RESEARCH INTERESTS: CELL SIGNALLING AND CANCER

Cell-signal receptor proteins and phospholipases, proteins that convert specific lipids (fats) into cell-signalling molecules, perform vital roles in the regulation of cell division and enable certain cell types to migrate throughout our bodies.

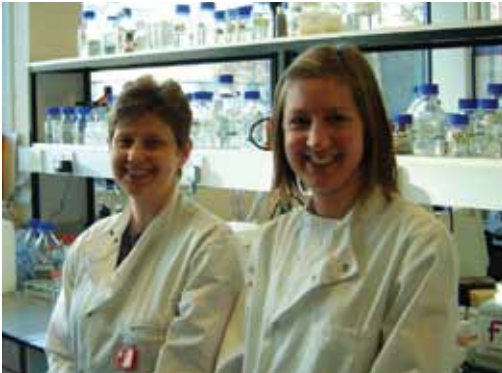
The identification of mutations present in specific cell signal-receptors and phospholipases expressed by cancer patients can provide information to help improve drug and cancer vaccine

therapies that target uncontrolled cell division and cell migration. My research group is focusing on developing a model system to identify new cancer drug and vaccine therapies that will target key 'cancer specific' cell-signal receptor and phospholipase mutations.

DAVID & THE NWCRF

Having been a part of the Bangor University NWCRF Institute since its inauguration, firstly as an NWCRF funded research fellow and now as a group leader, I have received tremendous NWCRF support.

I am always in awe of the dedication of NWCRF fundraisers that enable this support and I try to make a small contribution to their fantastic efforts by personally running the odd marathon on behalf of the NWCRF and promoting the NWCRF with North-Wales runners and running events organizers.



Functional Analysis Of A Novel DNA Damage Response Factor

Genetic and biochemical characterisation of a DNA damage response factor involved in DNA replication and repair

DR HOWARD LINDSAY, DR ELAINE TAYLOR, MS JANET HOLDEN, DR CLIVE PRICE
HEALTH AND MEDICINE, LANCASTER UNIVERSITY
TYPE OF CANCER: ALL TYPES

Every time a cell divides the DNA must be duplicated and accurately segregated between the two daughter cells. This means that DNA replication has to be completed and any damaged DNA repaired prior to the onset of cell division.

To do this the cell has evolved a complex system of DNA repair and cell cycle checkpoint pathways collectively known as DNA damage responses. Failure of any of these pathways can lead to the accumulation of mutations in the DNA (genetic instability) which in turn can result in the development of cancer.

Therefore an understanding of the molecular and biochemical mechanisms that preserve genome stability is vital for determining why cancers arise, as well as providing insights that will aid the development of therapies for prevention or cure.

Using a combination of yeast genetics and biochemical analysis in *Xenopus* egg extracts we have identified a novel member of the eukaryote DNA damage response that is required for efficient DNA replication as well as contributing to the repair of DNA.

We are now extending this analysis by using the yeast model system to genetically position this factor within the yeast DNA damage response and to use *Xenopus* egg extracts to identify the precise point during DNA replication and DNA repair where this highly evolutionarily conserved protein functions.

The acquisition of defects in DNA damage response pathways is recognised as being a key step in the development and progression of cancer. Many of these mutations are now thought to result during the repair of DNA double strand breaks

arising during DNA replication.

A thorough understanding of the pathways that maintain genome integrity, particularly during DNA replication is, therefore, fundamental to our understanding of cancer biology. Many chemotherapeutics work by inducing DNA damage and the ability to target specific forms of therapeutic damage to cancer cells lacking the appropriate DNA repair pathway would provide a valuable mechanism for the selective killing of tumour cells.

A comprehensive account of the processes and components involved is therefore vital to the development of biomarkers for determining cancer status as well as for the development and application of combination therapies.

Jagged1 Shedding; Elucidating The Biochemical Mechanisms And Physiological Relevance To Prostate Cancer

Investigating how the Notch ligand, Jagged1, participates in prostate cancer pathogenesis

DR. ED PARKIN AND CATHERINE PARR-STURGESS
BIOMEDICAL AND LIFE SCIENCES, SCHOOL OF HEALTH AND MEDICINE, LANCASTER UNIVERSITY
CANCER CONCERNED: PROSTATE

Jagged1 is a protein at the surface of cells that has been shown to have a key role in the development of prostate cancer.

We are interested in how the protein is broken down to yield smaller fragments which participate in communications between cells effectively telling them how fast to grow and divide.

Undesirable alterations in the breakdown of Jagged1 might,

therefore, lead to excessive cell division and the formation of cancerous tumours.

To date we have had a high degree of success with the project and have recently published data demonstrating that the key enzyme responsible for the breakdown of Jagged1 is one called 'ADAM17'.

By designing different forms of Jagged1 and genetically engineering cells to produce these forms of the

protein we have investigated several other factors which might possibly influence its shedding. Lipid rafts are specialized regions of the cell surface in which a range of important cellular processes are thought to be focused including the shedding of a variety of proteins.

Furthermore, these cellular structures have been implicated in the development of a range of cancers. By designing a form of Jagged1 which is

artificially located in rafts (as opposed to normal Jagged1 which is not present in rafts) we have shown that these structures are not involved in the regulation of Jagged1 shedding. Similarly we have designed a form of Jagged1 which lacks the cytosolic domain of the protein (part of the protein previously thought to be involved in the regulation of its shedding) and shown that removal

of this part of the protein does not, in fact, affect Jagged1 shedding.

More recently we have made a very interesting finding in that the metal copper can regulate the breakdown, not just of Jagged1, but of related molecules in the cell which also have a role to play in cancer pathogenesis.

We are currently investigating whether such metal-mediated modulation of these proteins is

linked to the ability of copper to stimulate new blood vessel formation in tumours as a way of feeding their growth.

If we can elucidate the molecular pathways involved we may be able to contribute to the development of new treatments not just for prostate cancer but for a range of other cancers.



Investigation of Cell Shape-Dependent Calcium Changes that are Necessary for Cell Proliferation

This study is examining the signalling processes that stop inappropriate proliferation of healthy cells

DR ALEC SIMPSON, DR TOMOKO KAMISHIMA

DEPARTMENTS OF CELL AND MOLECULAR PHYSIOLOGY, INSTITUTE OF TRANSLATIONAL MEDICINE, UNIVERSITY OF LIVERPOOL

TYPE OF CANCER: ALL TYPES

Cancer cells escape the control mechanisms that prevent inappropriate cell proliferation. Healthy cells normally require an external stimulus such as a growth factor to make them proliferate. Consequently, mutations in genes involved in the pathways that signal growth factor responses can lead to cancers.

Another constraint on cell proliferation that is not so well characterised is cell shape. In order for a growth factor to promote proliferation cells must be spread out with a flattened profile.

In healthy tissues cells usually adopt more solid shapes. Thus, when a cell dies or is lost through injury neighbouring cells flatten and spread out into the free space in order to replicate. Thus, cell shape influences the actions of proliferative stimuli. Cancer cells must also escape this cell shape-dependent brake on proliferation.

Calcium is widely known for its structural role in bone and teeth, however small changes in concentration within cells are used to regulate a wide range of cellular processes. Proliferation is one such

process that is regulated by calcium. Growth factors stimulate an increase in intracellular calcium that is essential for proliferation.

By manipulating cell shape we have found that when cells are prevented from spreading growth factors no longer stimulate the entry of calcium. Consequently, a cell shape-dependent calcium influx is required for cells to proliferate.

In the cells we are investigating, there are two main types of calcium entry. One is activated by the release of calcium from the cell's intracellular stores (an early event in growth factor stimulation), the other can be activated when the calcium stores remain full.

It appears that both pathways may be affected by cell shape. It is also apparent that both types of calcium entry share some common molecular components.

One such component is the protein, *stim1* which is now recognised as an essential regulator of both store-operated and store-independent calcium entry. When *stim1* is activated it aggregates to form very distinct puncta that can be readily visualized.

By examining the formation of these puncta upon induced depletion of the intracellular calcium stores we have found that manipulating cell shape by preventing cell spreading does not prevent puncta formation.

However, the growth factors appear not to be very effective at stimulating puncta formation so it is possible that with more modest depletions of the intracellular calcium stores activation of puncta formation is impaired.

Alternatively, if pathways that lead to activation of calcium influx channels are not affected by changes in cell shape, then changes in cell architecture could result in increased inactivation of calcium channels.

Resolving these questions should give an insight into how calcium influx could be manipulated to prevent unregulated proliferation.



Experimental prostate cancer therapeutics by suppressing oncogenes osteopontin and C-FABP in nude mice

Suppression of prostate cancer by OPN and C-FABP siRNAs

DR S SYED-FOROOTAN, MR Z BAO, MRS L KAMALIAN, MISS Y ZHANG, MR EM MALKI, PROFESSOR CS FOSTER, PROFESSOR Y KE
DEPARTMENT OF CLINICAL & MOLECULAR CANCER MEDICINE, UNIVERSITY OF LIVERPOOL
CANCER CONCERNED: PROSTATE

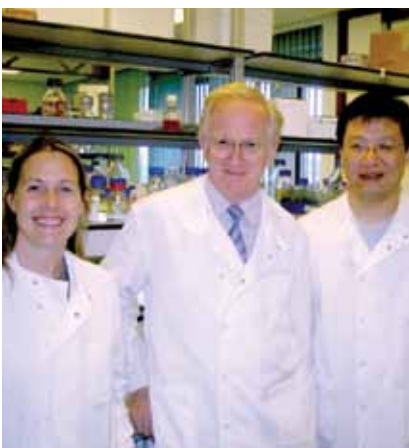
Our laboratory has previously demonstrated that two genes, named osteopontin (OPN) and cutaneous fatty acid-binding protein (C-FABP) respectively, are over-active in prostate cancer and they are able to promote cancer growth and spread. In this study, we first tested whether suppressed expression of OPN can inhibit the tumorigenicity of prostate cancer. Then we investigated whether suppressing C-FABP can promote regression of tumours already developed in mouse.

Small interference RNAs against OPN were transfected into highly malignant Du145 prostate cancer cells, which express high level of OPN prior to the transfections, to establish OPN-suppressed clones. Compared with the control transfectants, suppressed expression of OPN significantly inhibited cell invasiveness and anchorage-independent growth. Similar results were obtained

from in-vivo experiments. OPN-suppressed transfectants produced significant reductions in average sizes of subcutaneous tumours after inoculation into nude mice. When the levels of OPN were analysed in the tumour tissues, it was found that the reduced OPN expression levels were significantly associated with the reducing tumour sizes. These results suggested that OPN is an effective target for therapeutic intervention of prostate cancer.

Four doses of C-FABP siRNA suspended in atelocollagen were injected around the tumour masses (sized 50 ~ 60 mm³) produced by PC-3M cells in four groups of nude mice. Scrambled siRNA in atelocollagen and C-FABP siRNA in buffer were administrated into two control groups of mice. At autopsy (35 days after the treatment), the average weight of tumours produced by the two control groups was 802±406 mg (scrambled

siRNA) and 650±142 mg (siRNA in buffer), respectively. The average weight of tumours produced in each of four testing groups was 860±139 mg (1µM), 700±201 mg (5µM), 240±29 mg (10µM), and 210±70 mg (15µM). In comparison to the tumours produced by scrambled siRNA, treatment with 1µM or 5µM siRNA in atelocollagen did not produce significant differences. However, the average size of tumours from the groups treated with 10µM and 15µM siRNA in atelocollagen was significantly reduced by more than 3 fold. Immunohistochemistry revealed that the levels of C-FABP staining in tumours from mice treated with 10 µM and 15 µM dosages were lower than those from other groups. These results demonstrated that C-FABP siRNA delivered by atelocollagene can significantly inhibit prostate cancer growth in nude mice when administered externally in doses ranged from 10 µM and 15 µM.



Identification of Genes Modulated Following Inhibition of PKC-zeta Expression in Human Prostate Cancer Cells

This project has shown the gene PRKCZ to be a novel target for treating prostate cancer

PROFESSOR CHRISTOPHER S FOSTER, PROFESSOR YOUQIANG KE, PROFESSOR YUN-LU LIAN & DR JANET RISK
DIVISION OF PATHOLOGY, SCHOOL OF BIOLOGICAL SCIENCES & SCHOOL OF DENTISTRY, UNIVERSITY OF LIVERPOOL
CANCER CONCERNED: PROSTATE

Gene knockdown studies in this laboratory have provided new evidence that expression of the gene Protein Kinase C-zeta (PRKCZ) independently determines the aggressive phenotype of human prostate cancer. These findings

resulted in a major publication (Yao et al., 2010). Thus, we confirmed our initial hypothesis that over-expression of variant "b" of the PRKC-ζ gene (the NM form) in invasive and aggressive forms of prostate cancer was responsible for modulating

prostate cancer cell motility and hence contributing to invasion and metastasis. During this study, we also identified that two different PKC-ζ variants are encoded by the PKC-ζ gene, although their particular functions remained unclear. Gene-

walking, sequential PCR and gene-sequencing revealed a previously undetected variant that included an exonised intronic segment of the gene. Preliminary data suggest that this form is specific for prostate cancer, not being detected in benign primary prostatic tissues. A novel monoclonal antibody was raised to the hypothesized protein sequence translated from the expressed gene-sequence. A second paper detailing these findings has been prepared for publication (Yao et al., 2011). As a consequence of these findings, it was further hypothesized that small molecule inhibitors specifically targeting PKC- ζ_b might also be capable of ameliorating, or

reversing, the malignant phenotype of prostate cancer cells in a manner similar to that obtained following knockdown of the PRKCZ gene. Work in the laboratory is currently evaluating two new PKC- ζ_b isoform-specific compounds that have been synthesized in the Chemistry Department of Duke University, NC, USA. As a consequence of the preliminary data obtained, this collaboration with Duke has now been extended to include members of the Department of Chemistry at Liverpool University together with local bioinformaticians, pharmacologists and structural biologists. The intention is to build upon this recent published data to develop novel

prostate-specific stratified medicines that are biologically-relevant to treating individual patients with prostate cancer.

1. Yao S, Bee A, Brewer D, Dodson A, Beesley C, Ke Y, Ambroisine L, Fisher G, Møller H, Dickinson T, Gerard P, Lian L-Y, Risk J, Lane B, Smith PH, Reuter VE, Berney DM, Gosden CM, Scardino P, Cuzick J, Djamgoz M, Cooper CS, FOSTER CS. PRKC- ζ_b expression promotes the aggressive phenotype of human prostate cancer cells and is a novel target for therapeutic intervention. *Genes and Cancer*, 1: 444-464 (2010).

2. Yao S, Ireland S, Bee A, Beesley C, Dodson A, Dickinson T, Gerard P, Lian Y-L, Risk J, Smith P, Ke Y, Cooper C, Gosden C, FOSTER CS. Novel variant PRKC- ζ_{PC} selectively expressed in human prostate cancer. (In preparation for submission to *Genomics* 2011).



Regulated and deregulated secretion from primary myofibroblasts in gastric cancer

Role of stromal cells in cancer development and progression

PROFESSOR ANDREA VARRO, DR ROZ JENKINS, SILVIYA BALABANOVA, DR CHRIS HOLMBERG
MOLECULAR AND CLINICAL CANCER MEDICINE, INSTITUTE OF TRANSLATIONAL MEDICINE, UNIVERSITY OF LIVERPOOL
CANCER CONCERNED: GASTRIC

In solid tumours, cancer cells are surrounded by stroma, which consists of extracellular matrix proteins and supporting cells.

There is increasing evidence that stromal cells promote cancer cell growth. They contribute to tumorigenicity by releasing growth factors, cytokines, chemokines, extracellular matrix (ECM) proteins, proteases and their inhibitors that determine tumor cell proliferation, migration and invasion, as well as promoting angiogenesis and stimulating immune reactions. Differences in gene expression in the stromal compartment have been shown to predict clinical outcome and response to therapy.

We have investigated a key type of stromal cell, the myofibroblast, in gastric cancer. Myofibroblasts, also sometimes called activated fibroblasts, and they are also present in normal tissue in low density, and they increase with inflammation, infection or tissue damage.

Increased rates of migration and proliferation were exhibited by

cancer derived myofibroblasts (CAM) compared with adjacent (ATM) and normal (NTM) tissue derived myofibroblasts, and conditioned medium (CM) from CAMs stimulated migration, invasion and proliferation of gastric cancer cells significantly more than either ATMs or NTMs.

Moreover, in xenografts in SCID mice, myofibroblasts from a patient with metastasis were recruited to a distant site and stimulated tumor growth both locally and at a distant site, while myofibroblasts from a non-metastatic tumor enhanced only local tumor growth.

Our aim was to characterize how these cells secrete factors that may influence cancer cell behaviour. Studies using iTRAQ revealed decreased secretion of the extracellular matrix (ECM) adaptor protein, TG β ig-h3, in cancer derived myofibroblasts (CAM) that was correlated with poor survival. In normal (NTM) and adjacent tissue (ATM) derived myofibroblasts there was calcium-dependent regulated secretion of TG β ig-h3 but this was virtually abolished in CAMs from

patients with short survival.

Consistent with this, the secretory response to stimulation (IGF-II) is maintained in the presence of brefeldin-A, and cyclohexamide.

The capacity for regulated secretion is lost in myofibroblasts from gastric tumours from patients with poor survival. Both myofibroblast and cancer cell migration was inhibited by TG β ig-h3. Moreover, TG β ig-h3 also inhibited tumor growth in vivo.

Decrease and loss of regulated secretion of an ECM protein by myofibroblasts is therefore linked to cancer progression, indicating that the capacity to rapidly secrete proteins such as TG β ig-h3 plays a tumor-suppressor function.



Inhibition of α -methylacyl CoA racemase Designing inhibitors as potential drugs for a new cancer target.

**DR ANDREW CARNELL, PROFESSOR LU-YUN LIAN,
PROFESSOR CHRIS FOSTER, DR ROBERT GIBSON**
DEPARTMENT OF CHEMISTRY; DEPARTMENT OF BIOLOGICAL
SCIENCES, UNIVERSITY OF LIVERPOOL
CANCER CONCERNED: PROSTATE

Prostate cancer patients are frequently treated by blocking the effect of the male hormone androgen, either using drugs or by surgical castration. However, tumours ultimately progress to an androgen-independent stage which is more difficult to treat. We are studying a protein called AMACR, an enzyme that breaks down fats derived from dairy foods in the body in a specific way.

A collaborating group in Baltimore, led by Issacs, used a genetic technique, called siRNA knockdown, that prevents AMACR from being formed in the cancer cells and showed that the protein is crucial for cancer cell survival. This means that AMACR is a viable target for drug therapy.

The effect of genetically knocking out the enzyme was more than additive but independent from the effect of androgen blockade, hence a new drug treatment that is complementary to androgen blockade is possible. In addition, there is new evidence that advanced androgen-independent-

prostate cancer, could be switched to androgen-dependent by inhibiting AMACR. Thus a dual therapy in which the drug that targets AMACR makes the cancer cells more susceptible to androgen blockade would be an attractive approach. The ultimate aim of our research is to find molecules that latch on to the AMACR, inhibit its normal function and slow down or stop the growth of cancer cells.

The elucidation of the three-dimensional structure of AMACR would significantly increase our interpretation and knowledge of both catalysis and interactions with inhibitor molecules.

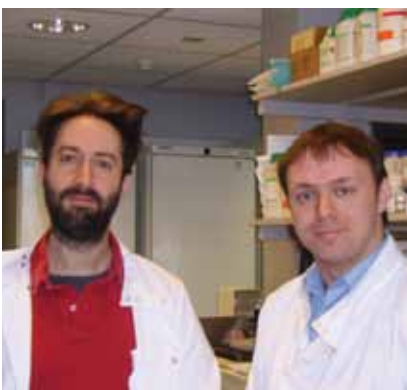
Biophysical characterisation by NMR and X-ray crystallography require significant quantities of AMACR. Therefore, a cell-free system and various strains of *Escherichia coli* optimised for protein expression were trialled against several genetic constructs. Analysis of these combined systems produced varying amounts of AMACR protein with an active form

of AMACR isoform 1 produced and validated by HPLC. Through targeted mutagenesis, the remaining splice variant isoforms can now be produced and compared.

The relative similarity between the human and the related *Mycobacterium tuberculosis* racemase (whose structure is known) afforded us a template to design alternative substrates and inhibitors based on computational screening of ligand compound libraries.

We have identified a possible molecule to replace co-enzyme A to which specific groups can be attached. The small molecule to replace co-enzyme A has been observed to inhibit the racemisation of CoA-ibuprofen, possibly by competing for binding within the active site. These new compounds can be assessed by HPLC and their relative AMACR isoform activity determined.

Photo: Left to right - Dr Robert Gibson, Professor Lu-Yun Lian, Dr Andrew Carnell



Interrogation of the phosphorylation networks regulating invasive cell migration in a *Drosophila* model of ovarian cancer metastasis Using fruit flies to identify enzymes affecting the spread of ovarian cancer.

DR DAIMARK BENNETT, DR NEVILLE COBBE
INSTITUTE OF INTEGRATIVE BIOLOGY, UNIVERSITY OF LIVERPOOL
CANCER CONCERNED: OVARIAN

Ovarian cancer is an aggressive form of carcinoma that is difficult to detect before it has spread to other parts of the body through a process known as metastasis. This renders treatment very difficult, and on average, less than a third of patients survive for more than 5 years after diagnosis. Our goal is to understand

the cause and mechanisms of this invasive cell migration using the fruit fly, *Drosophila melanogaster*. During normal development of the *Drosophila* ovary, a specialized group of epithelial cells (known as border cells) migrates through the egg chamber in a manner akin to the invasive migration of ovarian cancer

cells. As border cell migration can be readily visualised microscopically, this provides a powerful model system to study the mechanics of ovarian cancer metastasis *in vivo*, with conserved genes previously implicated in both processes alike.

Our major focus is on the way cancers are controlled by reversible

phosphorylation, by identifying kinases and phosphatases affecting border cell migration. Importantly, these two enzyme classes together represent roughly a quarter of the drugable human genome. Since this project began in January 2010, we have performed extensive computational analyses to identify all the *Drosophila* kinases that have an identifiable counterpart in humans, as well as *Drosophila* proteins identified as either catalytic or regulatory phosphatase subunits. An important aspect of targeted drug design against enzymes such as kinases will also involve the ability to recognise their normal substrate and their relationship to other kinases (e.g. to better assess potential non-

specific effects on related enzymes). To this end, we are performing a rigorous phylogenetic analysis, taking advantage of available crystal structures to guide the alignment of sequences.

Using our database of conserved *Drosophila* kinases and phosphatases, fly stocks have been used in genetic crosses in which short hairpin RNA (shRNA) molecules were specifically expressed ectopically within border cells, leading to depletion of a particular enzyme within the border cells by means of RNA interference. In our first screen, genetic crosses were performed with 577 shRNA lines, including 244 phosphatase lines and 221 independent kinase lines;

33 lines were identified in which defective border cell migration was reproducibly observed. Since it is conceivable that enzymes that are not normally prevalent in the ovary might nevertheless be aberrantly produced during cancer progression, we have also begun to look at the effects of over-expressing various kinases and phosphatases in border cells with the aid of a further 198 fly stocks.

In parallel with ongoing screens, we have been generating additional tools by recombining various fluorescent proteins to differentially label the cell surface and nuclei of migrating border cells, in order to follow up candidate genes in greater detail.



Structural Motifs in S100 Proteins that Cause Metastasis

Investigating better cancer therapies

DR KAEKO TOZAWA, PROFESSOR PHILIP S. RUDLAND, DR GUOZHENG WANG, PROFESSOR LU-YUN LIAN & DR ROGER BARRACLUGH
INSTITUTE OF INTEGRATIVE BIOLOGY, UNIVERSITY OF LIVERPOOL
CANCER CONCERNED: BREAST

Over a number of years, we have sought to identify proteins that are key mediators of the development of metastases, with the key aim that such proteins could be the targets of a new generation of specific anti-metastatic cancer medicines. One of the proteins that we have identified as harmful to breast cancer patients is a calcium-binding protein called S100A4, and other researchers have now shown that the presence of this protein in other common cancers reduces the survival of the cancer patients.

S100A4 protein acts by combining with other proteins inside the cell. In metastasis, it combines with part of an important protein involved in cell movement, myosin heavy chain. We have already shown that the effect of S100A4 on cell movement is a key part of its role in the development of metastatic cancer. We have now shown that the removal of amino acids from the end of the S100A4 protein (C-terminus), very much reduces the ability of S100A4 protein to alter cell movement and metastasis and also its ability to interact with its myosin target.

In order to design medicines which will stop the action of S100A4 protein, we need to know its three dimensional shape. Although the shape of the S100A4 protein on its own is already known, it is important to know the shape of the protein when it is in its active form, attached to its target protein, myosin heavy chain, because an effective medicine would need to be directed against this form of the protein. Using a combination of molecular modelling and sophisticated structural biology techniques, carried out in the new University of Liverpool, Nuclear Magnetic Resonance Centre for Structural Biology, in the Institute of Integrative Biology, we have determined how S100A4 fits together with its target. We have also carried out experiments to identify the precise changes in the position of the individual atoms of S100A4, to define in three dimensional space, the changes of shape that occur when S100A4 binds to its target.

Such detailed work allows us to build up a three-dimensional picture of the S100A4 protein when it causes metastasis. This information will help

us to design medicines which interfere specifically with the action of the S100A4 protein. We expect that such medicines will be better for patients suffering from a wide range of common cancers than the non-specific medicines presently in widespread use for treating metastatic cancer.

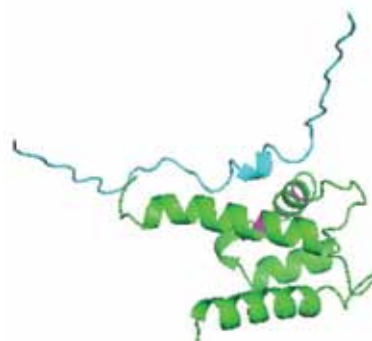


Figure shown: The complex between S100A4 protein in green and its target, blue.

Focus on Researchers



David Fernig

Professor of Biological
Chemistry, Department
of Chemical and
Structural Biology
University of Liverpool

Place of birth: Paris, France

BSc: Biochemistry, University of Bristol

PhD: Biochemistry, University of Nottingham

I recall very clearly my first interaction with the NWCRF – my interview in 1990 for one of the three NWCRF endowed Lectureships at the University of Liverpool. A panel of Professors of the University sat across the table, eminent in fields ranging from Surgery to Physiology.

With them was the representative of the NWCRF, Mr Curig Roberts. He asked the one question that floored me and which I remember to this day: “Do you think you are old enough for this position?”. For a few seconds I was stumped. I had on occasion wondered if at 31, I might be too old, but I had never considered this to be too young!

The NWCRF Lecturers had to deliver excellent research. A panel monitored the quality of the lecturers’ research every 5 years. If this was judged to be below par, their Lectureship was terminated.

This may sound brutal, but one must remember that these positions are a real privilege and privilege carries with it responsibility. Indeed, such a model of periodic review of people and institutes is common currency in science.

The NWCRF Lecturers were also charged with building a network of researchers across campus focused on cancer. Rather than establishing a conventional Cancer Centre, which has been accomplished successfully by others, I set about developing a network of physicists, chemists, engineers and mathematicians. This would provide a rich background for our cancer research to develop new technologies, instruments and tools.

Twenty years after starting as a NWCRF Lecturer, we are in a very powerful position. Alongside my research on the mechanisms used by cells to communicate, we can now analyse

cancer cells in a way that we did not even dream about twenty years ago.

For example, new microscopes, developed by physicists and using tools invented by chemists allow us to see single molecules in single living cells.

To conclude, in the late 1980s the NWCRF set about making a major investment.

By monitoring this investment from the point of view of the science, the NWCRF ensured that it delivered a major return. This is, after all, the aim of the fundraisers and has been achieved handsomely in this case.



Identification Of Regulators Of Metastasis In Uveal Melanoma

Identification of the genetic changes that drive the fatal spread of uveal melanoma cells

DR SARAH LAKE, DR SARAH COUPLAND, PROF. BERTIL DAMATO
 DEPARTMENT OF MOLECULAR AND CLINICAL CANCER MEDICINE, INSTITUTE OF TRANSLATIONAL MEDICINE, UNIVERSITY OF LIVERPOOL
 CANCER CONCERNED: UVEAL MELANOMA

Identification of the genetic changes that drive the fatal spread of uveal melanoma cells.

Uveal melanoma is a cancer of the pigmented cells of the eye. Although this type of cancer is rare, affecting less than 1 person per 100,000 each year, approximately 50% of sufferers will die of their disease due to spread of cancer cells, via the blood stream, to the liver causing secondary tumours that are incurable.

The uveal melanomas that are fatal are those whose cells have lost of one copy of the third largest chromosome, number 3, and gained an area known as the q arm of chromosome number 8. Chromosomes are the structures that carry our genes and therefore changes in the number of chromosomes in a cell result in changes in the number of genes. Figure 1 shows the chromosomes in a normal human cell highlighting numbers 3 and 8q.

It is therefore, vitally important to understand why changes in chromosome 3 and 8q genes are

so dangerous for uveal melanoma patients. The rarity of uveal melanoma can make large studies difficult. However, we are fortunate in being able to perform this research because so many patients with uveal melanoma are referred to us, travelling from all parts of the UK and from overseas for diagnosis and treatment.

Using a high resolution method known as array SNP we are analysing 1.8 million genes in cells from uveal melanomas that have proved fatal and comparing our findings with the same genes in uveal melanomas that are not life-threatening. Once we have discovered the genes causing fatal tumour cell spread, we will investigate the proteins that are produced by these genes, in a larger group of patients. We will also perform in-depth analyses of cultured melanoma cells to discover why and how the genetic changes are lethal. By identifying the genes that drive uveal melanoma spread we can determine the best therapies with

which to treat patients to prevent cancer spread to the liver and prolong the lives of patients.

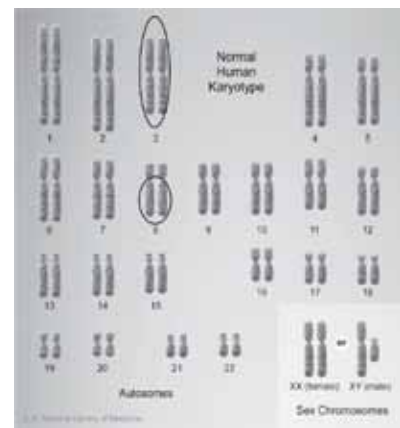


Figure shown. The DNA regulating all the biological activities of the body is divided into discrete units called genes that are housed in 23 pairs of chromosomes. These are recognised by their shape and numbered according to their size. The lethal genetic abnormalities in uveal melanoma occur in chromosomes 3 and 8q and are highlighted here. (Image taken from the Genetics Home Reference website <http://ghr.nlm.nih.gov/handbook/illustrations/normalkaryotype>)



Understanding How A Cancer Subverts Its Host (The Patient) For Its Own Ends

NWCRF Endowment 1991

PROF. DAVID FERNIG
 DEPARTMENT OF STRUCTURAL AND CHEMICAL BIOLOGY, INSTITUTE OF INTEGRATIVE BIOLOGY, UNIVERSITY OF LIVERPOOL
 CANCER CONCERNED: ALL TYPES

Unlike a bacterium or a yeast, animals (including humans!) are multicellular organisms. Animals are made up of trillions of cells. These specialise to form our different organs and tissues. A core principle of biology is that the needs of the body override the needs of the individual cell. So why don't our cells rebel to become free living? One reason might be the matrix. The matrix, which is made up

of proteins and sugars, lies between our cells and has long been proposed as their master regulator, because it is involved in deciding what cells do: whether they divide, die or migrate.

There are themes that recur in cancer research. Cancer cells grow uncontrollably, so the tumour gets larger. Cancer cells fail to die and the tumour gets larger. Rather than staying put, cancer cells migrate

to other parts of the body and the tumour metastasizes. These are the very processes that the matrix regulates. So some simple questions to ask are:

- (1) Is the matrix really the master regulator of cells?
- (2) Is the matrix in a cancer different from that of the normal tissue?
- (3) Are these differences important to

our understanding of cancer?

(4) Can these differences provide us with new markers and targets for therapy?

As is often the case, simple questions can be difficult to answer! Five years ago we embarked on the analysis of the matrix using specially designed computer programmes and high powered mass spectrometry. The first clear message from this work is that the matrix is indeed the master regulator of cells. It can be regarded as the ultimate censor: the matrix checks all information received by cells. We have more recently gone on to work with clinical colleagues to answer questions 2 to 4. Though early days, it seems that the answer is an emphatic



YES to all of these questions. The matrix in cancer is different to that of the normal tissue and pre-cancerous tissue. Some of these differences are clearly driving the changes that result in cancer. From a practical standpoint, these changes provide a set of easily measurable markers that have potential in diagnosis. This is important because many tumours are "silent". The patient has no idea they have cancer until their cancer has developed so far that it is not easily treatable; early diagnosis saves lives. Secondly, in the context of NHS costs, cheap easy-to-measure markers are cost-effective. Further into the future, understanding how the matrix in a cancer has changed will provide new

directions for the development of novel therapies.

Follow progress in the lab on the blog: <http://ferniglab.wordpress.com/>

L to R in photo, Mrs Nina Azmi (Malaysian government PhD student), Dr Noorhan Chelebi (Research visitor), Ms Ruoyan Xu (Self-funded PhD student), Ms Katie Wilson (BBSRC PhD Student), Prof. David Fernig (NWCRF endowment), Mr Dan Nieves (MRC PhD student), Ms Virginie Mournetas (UoL PhD student). Not in photo: Dr Lara Bogat (EPSRC funded), Dr Arthur Taylor (EPSRC funded), Mr Quentin Nunes (Surgeon, NIHR Pancreatic BRU PhD)

The role of the PLC-, PKC and Ca²⁺ signalling axis in VEGF-mediated angiogenesis

Investigating the mechanism of blood vessel growth during tumour development

DR KATHERINE HOLMES AND DR MICHAEL CROSS

DEPARTMENT OF MOLECULAR AND CLINICAL PHARMACOLOGY, INSTITUTE OF TRANSLATIONAL MEDICINE, UNIVERSITY OF LIVERPOOL.

TYPE OF CANCER: COLON, BREAST AND LUNG

Angiogenesis is defined as the process whereby new blood vessels are formed from pre-existing vessels. This process is stimulated by the growth factor vascular endothelial growth factor (VEGF), and is important for tumour growth and allowing spread of the tumour to distant sites in the body, a process termed metastasis.

The hypothesis that blocking angiogenesis may lead to reduced tumour growth is supported by the success of a number of anti-angiogenic drugs, such as Avastin and Sutent, in the treatment of colorectal and kidney cancer respectively.

VEGF is secreted by tumour cells and binds to a specific receptor (VEGFR-2) present on the surface of endothelial cells, the specialised cells that line blood vessels, and stimulates them to grow and form capillary structures capable of supplying blood to the tumour.

Activation of VEGFR-2 stimulates an intracellular signalling cascade resulting in the phosphorylation and

activation of a number of proteins.

One such protein is phospholipase C-gamma (PLC-), which is activated by phosphorylation resulting in an increase in intracellular calcium (Ca²⁺) concentration and the generation of lipid second messengers such as diacylglycerol (DAG).

We have discovered that activation of VEGFR-2 stimulates PLC- resulting in the increased expression of a protein called regulator of calcineurin 1 (RCAN1). We have also shown that RCAN1 is able to regulate the migration and tubular morphogenesis of endothelial cells; this work was recently published in the scientific journal PLoS ONE.

Our laboratory research work over the last year has been concerned with identifying the precise function of RCAN1 in endothelial cells. Recent results from our lab suggest that RCAN1 is able to regulate VEGFR-2 phosphorylation and the cell surface levels of the VEGFR-2 itself, suggesting that RCAN1 may regulate the spatial

and temporal activation of VEGFR-2.

We are currently trying to determine the exact intracellular mechanism that RCAN1 uses to regulate VEGFR-2 function in endothelial cells.

We hope that a complete understanding of this pathway, and its importance in regulating VEGFR-2 signalling, will enable the identification of targets for pharmacological intervention which block VEGF action and prevent angiogenesis and ultimately tumour growth.

Focus on Researchers



Dr Ed Parkin

NWCRF funded
researcher at
Lancaster University

Place of birth: Doncaster, South Yorkshire
BSc (Hons) Biochemistry, Lancaster University
PhD in Lipid Biochemistry, University of
Central Lancashire

ACADEMIC POSITIONS

1995-2006 Postdoctoral Researcher,
University of Leeds. Here I worked with
Professors Nigel Hooper and Tony Turner
on the role of lipid rafts and proteinases
in human health and disease.

Lipid rafts are specialised regions at the
surface of cells which act as 'hot-spots'
for a range of cellular processes relevant
to both cancer and neurodegenerative
diseases. In terms of proteinases, my
research at Leeds focused on a group of
enzymes known as 'ADAMs' which are
key regulatory enzymes in a range of
cancers and other human diseases.

2007-present Lecturer, Lancaster
University. Having done my
undergraduate degree at Lancaster it
was with great pride that I returned
to such a highly respected research
establishment. Funding from the
NWCRF and other sources has enabled
me to develop my research interests at
Lancaster which now run alongside my
teaching at both undergraduate and
postgraduate level.

I am also particularly encouraged, as
Head of Undergraduate Admissions
for the Division of Biomedical and Life
Sciences at Lancaster, to see such great
interest in cancer research amongst our
prospective students.

ED'S WORK WITH THE NWCRF

I work closely with the NWCRF in terms
of my research into the role of ADAMs
enzymes in mediating communication
between cancer cells. We are also
currently particularly interested in
the role played by copper in cell-cell
communication and how this might
serve to promote tumour growth. I
also enjoy presenting my laboratory's
research at NWCRF meetings and
participating in NWCRF visits to our
Division at Lancaster - it is always great
to have people see, at first hand, how
their fundraising efforts are helping our
cancer research!

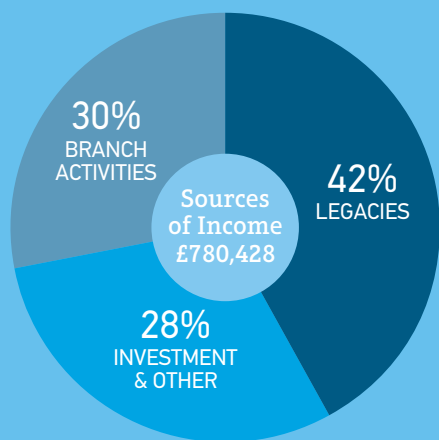
'Coming Together'



Researchers from Liverpool, Lancaster and Bangor Universities come together for the Scientific Symposium at NWCRF's AGM in May 2010.

Accounts

'09/10 proved more successful for the Fund and we have seen an overall increase in our income of nearly 13%.'



Legal And Administrative Details

LEGAL STATUS OF CHARITY

The Charity is regulated by a Scheme approved by the Chancery of the County Palatine of Lancaster on 11th March 1964, as amended by the Charity Commissioners on 30th April 1993. (Registered Charity number 223598). Registered office: 22 Oxford Street, Liverpool L7 7BL.

MEMBERS OF THE EXECUTIVE COMMITTEE AND PRINCIPAL OFFICERS AT 31ST OCTOBER 2010

Col J G Bryson OBE, TD, FRSA, JP, DL (Life President), Mr M S Potts FCA, FRSA, DL (President), Mr J C Lewys-Lloyd FCA (Chairman and Trustee), Mrs H E Dring (Vice Chairman and Trustee), Mr A P Farmer (Hon Treasurer and Trustee), Mr D K Leach (Asst Treasurer), Mrs A Jackson (Chief Executive Officer), Mrs S Brown (Finance and Communications Manager), Mr W M Barton (Trustee), Mr C L W Jackson, Prof M J Jackson (Chairman NWCRF Scientific Committee), Mrs S Gill (Neston), Mrs W E Hadwin (Lunesdale), Mrs O Ley (Lunesdale), Mrs M Shepherd (Lunesdale), Mrs B Powell MBE (Mold), Mrs P M Mann (Heswall), Mr A W Renison (Heswall), Mrs B J Smith (Southport), Mrs O Cutts (Southport), Mrs J Pettitt (Southport), Mrs D Sands (Wallasey), Mrs K Windsor (Wallasey).

AUDITORS

Langtons
Chartered Accountants
The Plaza
100 Old Hall Street
Liverpool L3 9QJ

SOLICITORS

Bremners
6th Floor
Silkhouse Court
Tithebarn Street
Liverpool L2 2LZ

INVESTMENT ADVISERS

OLIM Limited
Pollen House
10/12 Cork Street
London W1S 3NP

BANKERS

National Westminster Bank plc
22 Castle Street
Liverpool L69 2QB
Bank of Scotland plc
The Mound
Edinburgh EH1 1YZ

Committee contributions

COMMITTEE	COMMITTEE EFFORTS	H/O RECEIPTS	LEGACIES
ABERDYFI	£867	£230	
AUGHTON	£10,550	£4,734	£45,292
BANGOR	–	£1,353	
BLACKPOOL	£6,000	£205	
BURSCOUGH	£469	£1,518	
CALDY	£5,300	£128	
CHESTER	£1,130	£1,745	£1,000
FRODSHAM	£3,905	–	
HARLECH	£2,400	–	
HARTFORD	£800	–	
HESWALL	£11,000	£1,978	£250
HOLYWELL	£11,900	£2,604	
LLANDUDNO	£3,000	£469	£25,342
LLANFAIRFECHAN	£8,600	–	
LUNESDALE	£25,500	£6,023	
MACHYNLLETH	£4,100	£30	£250
MILLOM	–	–	
MOLD	£30,000	£458	£1,761
MORECAMBE	£2,500	£28	£8,907
NESTON	£12,859	£899	
RUTHIN	£7,500	–	
SOUTH CHESHIRE	£6,500	£1,001	
SOUTHPORT	£16,031	£6,613	£130,000
TYWYN	£1,770	£21	
WALLASEY	£18,250	£2,363	£3
WARRINGTON	–	£6,801	£8,427
TOTAL	£190,931	£39,203	£221,233

* Other Legacies not attributed to Committees total £102,442.

* £23,843 of head office receipts have been included within 'other donations'.

	TOTAL INCOME	LEGACIES (INC)	EXPENSES	RESEARCH
	£	£	£	£
2009/10	780,428	323,674	37,356	617,675
2008/09	688,738	198,330	31,120	508,997
2007/08	1,462,049	854,340	146,955	1,315,094
2006/07	1,092,379	534,918	151,983	940,396
2005/06	867,717	279,833	145,687	722,030

The average proportion of income available for research over the past 5 years was £820,838.

Executive Committee Report

The Executive Committee presents their report together with the Financial Statements of the charity for the year ended 31st October 2010. The Financial Statements have been prepared in accordance with the accounting policies set out in the notes to the financial statements and comply with the scheme for the regulation and management of the charity and applicable law.

OBJECTIVES AND ACTIVITIES FOR PUBLIC BENEFIT

The objective of the North West Cancer Research Fund is to raise funds to finance fundamental research in the North West of England, North and Mid Wales into the causes of all forms of cancers and the mechanisms by which cancers arise and exert their effects; also to maintain a cancer research library and to fund educational work in connection with the disease of cancer.

The trustees and members of the Executive Committee confirm that they have referred to the guidance contained in the Charity Commission's general guidance on public benefit when reviewing the Fund's aims and objectives and in planning future activities and setting the grant making policy for the year.

PRINCIPAL ACTIVITIES

In order to achieve its objectives the Fund provides central support services to a network of over forty branches of volunteers who organise a wide variety of fundraising activities in the North West and North Wales. The area covers Cumbria and Lancashire to the north, Merseyside and Cheshire and also North and Mid Wales. From time to time the Fund also organises larger fundraising events from Head Office to supplement the donation and legacy income attracted by the branches.

The Fund continues to fund cancer research projects approved by the

NWCRF Scientific Committee. Projects are normally for a period of three years but approval was given for five-year support for a new Cancer Research Institute in Bangor and a Cancer Research Fellowship in Lancaster in 2003. The Fund has also provided 5 year funding for a cancer research lectureship at the University of Liverpool since 1991. Research projects are undertaken at the Universities in Liverpool, Bangor and Lancaster. In addition the Fund provides support to the Liverpool Medical Institution for the maintenance of a cancer research library.

The Fund has branches of volunteers throughout Mid and North Wales, Cheshire, Merseyside, Lancashire and Cumbria. The activities of the branches continue to generate an income for the Fund which represents the hard work and dedication of its many supporters, to whom the Committee express their sincere gratitude.

RESEARCH POLICY

Research is carried out at three universities in the North West; the University of Liverpool, Lancaster University and Bangor University. There are normally about thirty research projects in progress at any one time, each lasting up to 3 years. In addition, 5 year funding is provided for a Lectureship at the University of Liverpool, a Fellowship at Lancaster University and for the NWCRF Institute at Bangor University. As

members of the Association of Medical Research Charities, we follow their guidelines for peer review. All research projects are carefully reviewed by our Scientific Committee (drawn 50% from Liverpool, 50% from elsewhere) who consult external referees for specialist advice before grants are awarded. The Fund is always willing to cooperate with other charities when opportunity or needs arise.

An annual grant is made to the Liverpool Medical Institution to support the cancer/oncology section of their library.

Endowments made in earlier years finance two professorial chairs at the University of Liverpool.

ORGANISATION

The trustees and members of the Executive Committee who have served during the year are set out on page 38. The principal officers must offer themselves for re-election annually. All other members of the Executive Committee are elected at the Annual General Meeting and serve a maximum of three years. Employees of the Fund are all appointed by the Executive Committee. Committee members derive no benefit, income or capital from the charity. Many day-to-day decisions are delegated to a Development sub-committee consisting of eight members of the Executive Committee.

FINANCIAL REVIEW

During the year the fund experienced an increase in income to £780,428 up 13% on the previous year. This was mainly due to an increase in income received from legacies which have risen by £125,344, up 63% on the previous year. Branch contributions remain strong and their activities remain essential not just with current fundraising but with promoting NWCRF and attracting potential future legacies.

2009 saw a recovery in the value of our investments after the economic downturn. In 2010 the value of our portfolio remains strong and has risen by £439,989 or 13%. The yield via dividends from the investments rose by 3% in the period.

The policy of keeping a strong cash amount is still being applied despite a decrease of 5% on the previous year in cash at the bank.

The total grants approved by the Executive Committee at its Annual General Meeting in May 2010 amounted to £750,000 and £13,000 for the Liverpool Medical Institution for the academic year 2010/11. The Executive Committee continues to provide funding to meet ongoing projects' financial commitments to completion.

Fundraising, publicity and administrative expenditure totalled £162,753, 9% lower than the previous year.

The rise in the value of investments meant the Accumulated Fund increased in value to £4,084,233.

INVESTMENT POLICY

Except for the restrictions imposed by the Ethical Policy the Fund places no further restrictions on the amount or type of investments made by the charity and adheres to the requirements of the Trustee Act 2000 and all relevant legislation. The fund has appointed OLIM Limited to manage the portfolio

on a discretionary basis, within agreed limits, monitored against an appropriate index, and reviewed on a regular basis by the trustees. The main objective is to provide a balance between capital growth and income in order to meet the Fund's future grant commitments which, by their very nature, generally run for periods of 3 to 5 years ahead.

ETHICAL POLICY

The Scheme has barred investment in tobacco and armament businesses. As members of the Association of Medical Research Charities, we follow their ethical guidelines for research.

RESERVES POLICY

The Executive Committee has deemed it prudent to maintain reserves at the current level in order to provide working capital and to safeguard forward grant commitments.

RISK MANAGEMENT

The Executive Committee has examined the major strategic, business and operational risks which the charity faces and confirms that systems have been established to enable regular reports to be produced so that the necessary steps can be taken to lessen these risks wherever possible.

MEMBERS OF THE EXECUTIVE COMMITTEE

At the Annual General Meeting held on 6th May 2010, the following officers were elected:

Mr J C Lewys-Lloyd – Chairman, Mrs H E Dring - Vice-Chairman, Mr A P Farmer - Hon. Treasurer.

The following members of the Executive Committee retired by rotation under Rule 7 (1):

Mr C L W Jackson and Mrs W Hadwin; Mrs A Halewood retired as a member. All other members of the Committee listed on page 38 served throughout the year.

EXECUTIVE COMMITTEE'S RESPONSIBILITIES

Legislation requires the Executive Committee (who act as trustees for the fund's charitable activities) to prepare accounts for each financial year which give a true and fair view of the fund's incoming resources and application of resources during the year, including its income and expenditure, and of the state of affairs at the end of the year.

In preparing these accounts the Executive Committee is required to:

- select suitable accounting policies and apply them consistently;
- make reasonable and prudent judgments and estimates;
- follow applicable UK Accounting Standards and the Charities SORP, disclosing and explaining any departures in the accounts;
- prepare accounts on the going concern basis unless it is inappropriate to presume that the charity will continue in operation.

The Executive Committee is also responsible for:

- keeping proper accounting records which disclose with reasonable accuracy at any time the financial position of the fund and enable it to ensure that the accounts comply with the relevant legislation;
- safekeeping of the fund's assets;
- taking reasonable steps for the prevention of and detection of fraud and other irregularities.

On behalf of the Executive Committee



J.C. LEWYS LLOYD
Chairman

Independent Auditors Report

We have audited the financial statements of the North West Cancer Research Fund embodying Friends of Liverpool Radium Institute for the year ended 31st October 2010 which comprise the Balance Sheet, the Statement of Financial Activities, and the related notes. These financial statements have been prepared under the accounting policies set out therein.

This report is made solely to the charity trustees, as a body, in accordance with section 44 of the Charities Act. Our audit work has been undertaken so that we might state to the charity trustees those matters we are required to state to them in an auditors' report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the charity trustees, as a body, for our audit work, for this report, or for the opinion we have formed.

RESPECTIVE RESPONSIBILITIES OF TRUSTEES AND AUDITORS

The trustees' responsibilities for preparing the Report of the Executive Committee and the financial statements in accordance with applicable law and United Kingdom Accounting Standards are set out in the Statement of Executive Committee's Responsibilities.

We have been appointed as auditors under section 43 of the Charities Act 1993 and report in accordance with regulations made under that Act. Our responsibility is to audit the financial statements in accordance with relevant legal and regulatory requirements and International Standards on Auditing (UK and Ireland).

We report to you our opinion as to whether the financial statements give a true and fair view and are properly prepared in accordance with the Charities Act 1993. We also report to you if, in our opinion, the Report of the Executive Committee is not consistent with the financial statements, if the

charity has not kept proper accounting records, or if we have not received all the information and explanations we require for our audit.

We read the other information contained in the Report of the Executive Committee and consider whether it is consistent with the audited financial statements. We consider the implications for our report if we become aware of any apparent misstatements or material inconsistencies with the financial statements. Our responsibilities do not extend to any other information.

BASIS OF OPINION

We conducted our audit in accordance with International Standards on Auditing (UK and Ireland) issued by the Auditing Practices Board. An audit includes examination, on a test basis, of evidence relevant to the amounts and disclosures in the financial statements. It also includes an assessment of the significant estimates and judgments made by the trustees in the preparation of the financial statements, and of whether the accounting policies are appropriate to the charity's circumstances, consistently applied and adequately disclosed.

We planned and performed our audit so as to obtain all information and explanations which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance as to whether the financial statements are free from material misstatement, whether caused by fraud or other irregularity or error. In forming our opinion we also evaluated the overall adequacy of the presentation of

information in the financial statements.

We have undertaken the audit in accordance with the requirements of APB Ethical Standards including APB Ethical Standards - Provisions Available for Small Entities, in the following circumstances:

- In common with many other organisations of this size and nature, the charity uses our firm to prepare and submit returns to the tax authorities and assist with the preparation of the financial statements.
- In common with many other organisations of this size and nature, the charity uses our firm to provide tax advice and to represent it, as necessary, at tax tribunals.

UNQUALIFIED OPINION

In our opinion the financial statements:

- give a true and fair view, in accordance with the United Kingdom Generally Accepted Accounting Practice, of the state of the charity's affairs as at 31st October 2010 and of its incoming resources and application of resources for the year then ended; and
- have been properly prepared in accordance with the Charities Act 1993.

STEPHEN WILLIAMS

Senior Statutory Auditor for and on behalf of Langtons Statutory Auditors & Chartered Accountants

16th March 2011

Balance Sheet at 31st October 2010

	Note	2010	2009
		£	£
Investments	5	3,937,907	3,497,913
Fixed assets	6	1	371
Current assets			
Stock	7	4,378	3,064
Debtors	8	14,333	18,419
Cash at bank and in hand	9	1,201,119	1,271,012
		1,219,830	1,292,495
LIABILITIES: AMOUNTS FALLING DUE WITHIN ONE YEAR			
Approved grants		1,109,267	818,211
Other creditors		14,238	13,610
		1,123,505	831,821
Net current assets		96,325	460,674
Net assets		4,034,233	3,958,958
Represented by:			
Accumulated unrestricted funds			
General		1,784,233	1,208,958
Designated	10	2,250,000	2,750,000
		4,034,233	3,958,958

The Financial Statements were approved and authorised for issue by the Executive Committee on 16th March 2011.

J.C.Lewys-Lloyd – Chairman. A.P. Farmer – Hon. Treasurer.

The notes on pages 45 to 47 form part of these accounts.

Statement of Financial Activities

for the year ended 31st October 2010

	Note	General Fund 2010 £	Designated Fund 2010 £	Total 2010 £	2009 (restated) £
INCOMING RESOURCES					
<i>Incoming resources from generated funds:</i>					
Voluntary income	2	595,956		595,956	488,276
Activities for generating funds – special events		23,970		23,970	19,565
Income from investments		148,259		148,259	144,026
Bank deposit interest		9,572		9,572	34,287
Other incoming resources – Income tax refunds		2,671		2,671	2,584
Total Incoming Resources		780,428	–	780,428	688,738
RESOURCES EXPENDED					
<i>Direct Charitable Expenditure:</i>					
Grants for cancer research			1,250,000	1,250,000	750,000
Liverpool Medical Institution			13,000	13,000	13,000
Costs of generating voluntary income	3	80,605		80,605	104,013
Special events costs		8,162		8,162	14,679
Support cost	3	36,630		36,630	29,749
		125,397	1,263,000	1,388,397	911,441
<i>Other Expenditure:</i>					
Investment management costs		24,399		24,399	20,319
Governance costs	3	12,957		12,957	10,981
Total Resources Expended		37,356	1,263,000	1,425,753	942,741
NET INCOMING/(OUTGOING) RESOURCES BEFORE TRANSFERS		617,675	(1,263,000)	(645,325)	(254,003)
Transfer to Designated Fund	10	(763,000)	763,000	–	–
Net (Outgoing) / Incoming Resources Before Revaluations and Investment Asset Disposals		(145,325)	(500,000)	(645,325)	(254,003)
Gain/(Loss) on disposal of investments		214,190		214,190	(365,686)
Movement on revaluation of investments		506,410		506,410	830,582
NET MOVEMENT IN FUNDS		575,275	(500,000)	75,275	210,893
Funds Brought Forward at 1 st November 2009		1,208,958	2,750,000	3,958,958	3,748,065
FUNDS CARRIED FORWARD AT 31ST OCTOBER 2010		1,784,233	2,250,000	4,034,233	3,958,958

The notes on pages 45 to 47 form part of these accounts.

Notes to the Financial Statements

for the year ended 31st October 2010

1. ACCOUNTING POLICIES

a) Accounting Convention

The financial statements are prepared under the historic cost convention as modified by the inclusion of investments at market value. In preparing the financial statements the charity follows best practice as laid down in the Statement of Recommended Practice "Accounting and Reporting for Charities" (SORP 2005) and applicable accounting policies.

b) **Income.** Credit for income is taken in the period in which it becomes receivable.

c) **Income Tax Refunds.** Credit for the refund of income tax suffered on dividends received is taken in the

period in which the dividend becomes receivable.

d) Grants for Research and Amenities

The grants are accounted for in the period in which they are authorised.

e) **Investments.** Investments are valued at middle market value at the balance sheet date with the increase in valuation in the year taken to the Accumulated Fund. All realised and unrealised gains and losses on investments are included in the Statement of Financial Activities.

f) **Stocks.** Stocks are stated at the lower of cost and net realisable value.

g) **Tangible Fixed Assets and Depreciation.** Tangible fixed assets are stated at cost. Depreciation is calculated to write down the cost of tangible fixed

assets by equal annual instalments over their expected useful lives. The rate applicable is: Office Equipment – 25%

h) **Resources Expended.** Expenditure is included on an accruals basis. Resources expended are allocated to the particular activity to which the cost relates. Specific costs are allocated directly; salaries and office running costs, including depreciation, are allocated on the basis 50% – Costs of generating voluntary income, 40% – Charitable activities and 10% – Governance. Governance costs comprise costs for the running of the charity itself as an organisation. Since this is a change in the way costs are allocated the 2009 figures have been restated on this basis to allow comparison (see note 3).

2. VOLUNTARY INCOME

	2010	2009
	£	£
Legacies	323,674	198,330
Contribution from branches	206,292	240,232
Trust income	675	2,975
Payroll giving	5,825	6,197
Other donations	59,490	40,542
	595,956	488,276

3. GENERAL OVERHEADS AND STAFF COSTS

Year ended 31st October 2010

	Costs of generating voluntary income	Charitable activities	Governance	Total
	£	£	£	£
Advertising	4,967			4,967
Publicity and promotion	25,152			25,152
Direct costs of generating voluntary income	4,699			4,699
Salaries and National Insurance	37,513	30,011	7,503	75,027
Office running costs	8,089	6,471	1,618	16,178
Auditors remuneration			3,720	3,720
Legal and professional fees			79	79
Depreciation of computer and other office equipment	185	148	37	370
	80,605	36,630	12,957	130,192

Year ended 31st October 2009

Advertising	4,136			4,136
Publicity and promotion	43,416			43,416
Direct costs of generating voluntary income	19,274			19,274
Salaries and National Insurance	28,578	22,862	5,716	57,156
Office running costs	8,423	6,738	1,684	16,845
Auditors remuneration			3,544	3,544
Legal and professional fees				-
Depreciation of computer and other office equipment	186	149	37	372
	104,013	29,749	10,981	144,743

4. STAFF COSTS

	2010	2009
	£	£
Wages and salaries	68,461	51,540
Social Security costs	6,566	5,616
	75,027	57,156

	2010	2009
	No.	No.
The employees emoluments fell within the following ranges		
Less than £10,000	–	1
£10,000 to £20,000	2	1
£20,000 to £30,000	1	1
	3	3

The average number of employees during the year was as follows

Fundraising and marketing	1	1
Administration and management	2	2

No employees' emoluments exceeded £60,000. No member of the Executive Committee received any remuneration. Travel and meeting expenses amounting to £2,024 (2009: £2,931) have been reimbursed by the charity.

5. INVESTMENTS

	Cost	Unrealised Gain	Market Value
	£	£	£
Cost/Market value at 31st October 2009	2,927,477	570,441	3,497,918
Purchases	411,689		
less Sales	(692,300)		
Profit realised on sales	214,190		
Movements in year	(66,421)		
Movement in unrealised gain		506,410	439,989
Cost/Market value at 31st October 2010	2,861,056	1,076,851	3,937,907

All investments are listed on a U.K. stock exchange.

6. FIXED ASSETS

	2010	2009
	£	£
Office equipment at cost brought forward	10,705	10,705
Additions	–	–
	10,705	10,705
Accumulated depreciation brought forward	(10,334)	(9,962)
Depreciation for the year	(370)	(372)
Net book value at 31st October 2010	1	371

7. STOCKS

	2010	2009
	£	£
Goods for re-sale	4,378	3,064

8. DEBTORS

	2010	2009
	£	£
Branches	14,333	10,774
Other debtors	-	7,645
	<u>14,333</u>	<u>18,419</u>

9. CASH AT BANK AND IN HAND

Current accounts	64,390	44,423
Cash on deposit	1,136,729	1,226,589
	<u>1,201,119</u>	<u>1,271,012</u>

10. APPROVED GRANTS

At the Annual General Meeting held on 6th May 2010 the following grants were approved:

Movements on Designated Fund	At 31st October 2009	Further Designations Approved at AGM	Charitable Expenditure in Year	At 31st October 2010
	£	£	£	£
Grants to The University of Liverpool				
Season 2009-2010	1,250,000		(1,250,000)	-
Season 2010-2011	750,000			750,000
Season 2011-2012	750,000			750,000
Season 2012-2013	-	750,000		750,000
Liverpool Medical Institution	-	13,000	(13,000)	-
Total	<u>2,750,000</u>	<u>763,000</u>	<u>(1,263,000)</u>	<u>2,250,000</u>

Designated funds are unrestricted funds earmarked by the Executive Committee for the provision of grants for cancer research over the next three years and the maintenance of a cancer research library.

11. TAXATION STATUS

The Fund is a registered charity and as such is not liable to income tax or corporation tax.

12. OPERATING LEASES

At 31st October 2010 the Fund had annual commitments under non-cancellable operating leases as follows:

OFFICE EQUIPMENT	2010	2009
Expiry Date:	£	£
Within 1 year	890	890
Between 2 and 5 years	2,599	3,489
After more than 5 years	-	-

How Can You Help Support NWCRF?

ONE-OFF DONATIONS

You can make a one-off donation in a few different ways, by cheque, bank transfer (see bank details below) or by calling us in the office on 0151 709 2919 and donating by card over the phone.

MONTHLY DONATIONS

Monthly donations can be made by taking our bank details into your bank and requesting to set up a Standing Order in aid of North West Cancer Research Fund. Alternatively if you have online banking facilities you can set up a Standing Order by entering our bank details (see below).

TIME DONATIONS

Donating your time as a volunteer means a lot to us at NWCRF, whilst we don't have shops we do have committees across the region who do lots of fundraising activities for us. If you have an idea for fundraising, want to join a committee or just want to help out but don't know how, give us a ring and we can have a chat.

LEGACY

A large portion of the Fund's income comes from legacies; by remembering North West Cancer Research Fund in your Will, you can help us continue our important research.

"Legacies are the life blood of charities like North West Cancer Research Fund. Please help make the future brighter for the next generation by leaving a legacy in your Will."

Dame Judi Dench DBE

Your solicitor will give you further advice on making your Will.

ONLINE DONATIONS

Online donations can be made via justgiving, www.justgiving.com/nwcancer. Currently we cannot receive donations through our website as the costs of having such a facility are very high. We already have justgiving set up to help individuals raise sponsorship; direct donations can also be made here without us incurring high costs, making sure more of your money goes to research and not to banking charges!

PAYROLL GIVING

In 1987 the Government introduced Payroll Giving as a form of tax effective giving to charities. You can support up to four charities of your choice with regular donations direct from your pay. It is cheaper because it is tax free. Please help us find the cause of cancer by making regular donations to us through your employer's Payroll Giving Scheme.

NWCRF do not have any charity shops so unfortunately we cannot accept your kind donations of furniture, books or clothes etc. If you would like to sell the items and donate the money to NWCRF you can do so through Ebay for charity or www.jumbleaid.com

Cheques can be made payable to:

NWCRF, Cancer Research, NW Cancer Research,
North West Cancer Research Fund

Bank Details

Natwest Bank, Sort-code: 60-13-19
Account Number: 04823133

GIFT AID IT!

Filling in and returning a Gift Aid form means we get more out of your donation. You only have to fill it in once and it applies to every donation you make. Please fill in and return a Gift Aid form today so we can make your money work even harder.

Using Gift Aid means that for every £1 you give, we can claim 25p from the Inland Revenue, helping your donation go further. This means that £10 can be turned into £12.50 just so long as donations are made through Gift Aid. Imagine what a difference that could make and it doesn't cost you a thing! So if you want your donation to go further, Gift Aid it. Just complete this form and send it back to us at the address below.

SIGNATURE..... DATE.....

TITLE: MR/MRS/MS..... INITIALS..... SURNAME.....

ADDRESS

..... POSTCODE.....

I want all donations I've made since April 2000 and all donations in the future to be Gift Aid until I notify you otherwise. To qualify for Gift Aid, what you pay in income tax or capital gains tax must at least equal the amount we will claim in the tax year.



NORTH WEST CANCER RESEARCH FUND
22 OXFORD STREET, LIVERPOOL L7 7BL
TEL 0151 709 2919 | FAX 0151 708 7997
INFO@NWCRF.CO.UK | WWW.NWCRF.CO.UK
CHARITY NUMBER 223598

A Big Thank you!

LEGACIES FROM THE ESTATES OF...

Phyllis Mary PRIOR, Mr & Mrs SHEPHERD, Col Mary CREAGH, Eveline SELLERS, Ethel Mary Kathleen PHILLIPS, Gerard Patrick WALSH, Dorothy Margaret TURNBULL, Una Dorothy ALKER, Lillian Mary WRIGHT, Grace Isabel McMAHON, Elizabeth Lucy MELLODEY, Eric Lowe THOMAS, Joan Margaret WILLIAMS, Mary Elizabeth WYNNE-WILLIAMS, Henrietta STOPFORTH, Leonard Alwyne PERRY, Rosina HALL, Marjorie G FOSTER, Anne CURTIS, Kathleen Joan REDDIN, Edna May HURST, Francis DOHERTY, Lord Leonard STEINBERG, William E MADDRELL.

THE FUND WOULD LIKE TO THANK THE FOLLOWING PEOPLE FOR THEIR GENEROSITY AND SUPPORT DURING THE YEAR FROM 1ST NOVEMBER 2009 TO 31ST OCTOBER 2010...

Mr G Marley NESTON, Airbus UK, Anne Lloyd LLAY, Mrs E Whitehead BETHEL, Mrs K Sellick SKELMERSDALE, St Hilary's Church WALLASEY, Mr D Lace RAINHILL, Mr T Blackburn BILLINGE, Ms D Denison CUMBRIA, Mrs J Shaw WARRINGTON, Mrs Hopkins WIDNES, Mrs B Wakeham CHESTER, Mrs C Howell HALEWOOD, Mr P Healey EATON, Mr P Horner BIRKDALE, Mrs V E MacDonald OLD SWAN, Mr R V Dillon BOLTON, Mrs P Bankes ORMSKIRK, Mrs S Dunscombe BILLINGE, The Stansfield Charitable Trust, Ms K Stout WHITEHAVEN, Mrs J P Pomfret BOLTON, Mrs B Trefor ST ASAPH, Mrs M Vaughan-Williams CARLISLE, Rev P Grudgings TYWYN, Team Brown HALEWOOD, Mrs B Walker WIDNES, Chester Caledonian Association, Team Rogers HALEWOOD, Mrs J Andrews STOCKTON HEATH, Mrs B Davies ORRELL, Mr Blenkinsop BURSCOUGH, Mrs A Anderson BURSCOUGH, Nationwide Produce Plc SOUTHPORT, Ms M Rooney ANFIELD, Mr & Mrs K Ashton BLACKBURN, Mr & Mrs G T Handley HALEWOOD, Dr K W Nightingale BRAMPTON, The Trafford Centre, MANCHESTER. Smart Storage, LIVERPOOL, Alma De Cuba, LIVERPOOL, Cup of Love Bakery, LIVERPOOL, Chocolate Cellar, LIVERPOOL, Utility, LIVERPOOL, Armstrongs, LIVERPOOL, Renault F1 Team, OXFORD, Argente Jewellery, WIRRAL, Puschka, LIVERPOOL, Andrew Collier, WARRINGTON, Barclaycard, Real Oasis, WEAVERHAM, Brew, LIVERPOOL, Joanne Arbon, OXFORD, Randolph Hotel, OXFORD, Hope Street Hotel, LIVERPOOL, Andrew Collinge, LIVERPOOL, Hallangen Art, LIVERPOOL, Liverpool Empire, LIVERPOOL, Parr Street Music School, LIVERPOOL, Mark Adkin, SOUTHPORT, Mike Hughes, SOUTHPORT.

THE FUND WOULD ALSO LIKE TO THANK THE FOLLOWING INDIVIDUALS FOR THEIR SUPPORT THROUGH MONTHLY AND ANNUAL DONATIONS...

Mr WM Barton, Mrs P Bradley, Mrs D Brooks, Mr & Mrs RP Bucknall, Mr DA Bunting, Mrs WE Burke, Mr R Corrie, Ms M Cusack, Ms C Davies, Mr TE Davies, Mrs AM Donnelly, Miss JM Downward, Mr TE Edwards, Mrs JDM Fairclough, Dr JGG Fraser, Mr & Mrs A Gough, Mrs A Greenwood, Mr C Groom, Mrs JA Hamlett, Mrs M Hevey, Mr RA Hughes, Mr D Ibbotson, Mr & Mrs MH Jackson, Mr ES Jones, Mrs M Jones, Mr ST Jones, Mrs B Loxton, Dr SOC Matondo, Mrs B McMorrnan, Mr JB Murphy, Mr LE Nolan, Mr C Owens, Parsonage Care, Mr MS Potts, Mr JL Powell, Mrs G Radcliffe, Mrs ES Renison, Mrs J Roberts, Mrs P Roberts, Mr S Rubin, Mr G Ryder, Miss EA Scott, Mrs G Scott, Mrs KM Stubbs, Mr P Swift, Mr TE Tarpey, Dr B Tew, Mrs GL Tickle, Dr G Tozer-Hotchkiss, Mr & Mrs WG Williams.

THE NWCRF PATRONS

The Marchioness of Cholmondeley. The Most Hon. The Marquess of Anglesey, D.L., FRIBA, FRHist.S, LBA., FR. The Most Rev. The Archbishop of Liverpool. The Most Rev. The Archbishop of Wales. The Rt. Rev. The Lord Bishop of Carlisle. The Rt. Rev. The Lord Bishop of Chester. The Rt. Rev. The Lord Bishop of Liverpool. The Rt. Rev. The Lord Bishop of Sodor and Man, The Rt. Rev. The Bishop of St Asaph, The Rt. Rev. The Lord Bishop of Warrington, The Very Rev. Dean Emeritus of Chester. The President of the Merseyside Free Church Federal Council. Lord Lieutenant of Gwynedd. Lord Lieutenant of Merseyside. Lord Lieutenant of Powys. The Vice Chancellor, The University of Liverpool. The Vice Chancellor, Liverpool John Moores University. The President of the Liverpool Medical Institution.

'The Importance of Research'



"Seven years ago I was treated for advanced Non-Hodgkins lymphoma at the age of 35. The shock not only to me, but my family and friends that someone who was usually fit and healthy with two small children could be weeks away from being killed by this awful disease was immense. I had little idea at the time that the treatment I received in the weeks and months after diagnosis would not have been possible as little as ten years ago. I was incredibly lucky to receive new drugs that had been the result of years of research. This meant I had a fighting chance. My diagnosis and treatment made me and my family realise that cancer can strike anyone at any age and without funds for research, many more lives will be and are lost to this unfair disease. I am living proof that research means there are more of us each year surviving cancer." **SARAH JACKSON**

NORTH WEST CANCER RESEARCH FUND

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CHARITY NUMBER 223598

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