Liverpool Ocular Oncology Biobank

UNIVERSITY OF LIVERPOOL

Liverpool Ocular Oncology Research Group

Ocular Oncology

NHS Specialised Services - national organisation responsible for the **commissioning of specialised services** that help improve the lives of children and adults with rare diseases or disorders.

Three specialist centres in England – Liverpool, Sheffield and London.

Liverpool Ocular Oncology Centre Clinical Team

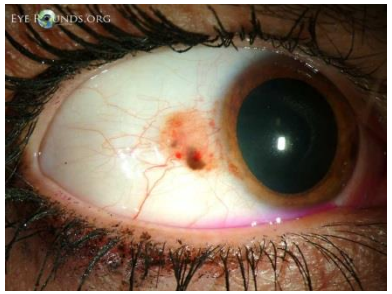
Liverpool Ocular Oncology Centre (LOOC)

Established by Professor Damato in 1993

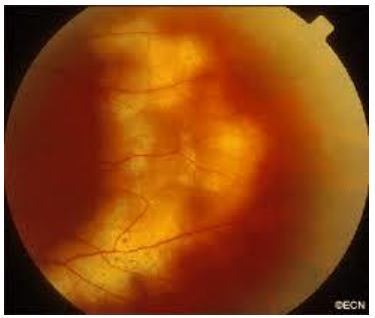
LOOC sees approx. two thirds (300 patients) of all national referrals annually.

- proton beam facility at Clatterbridge Centre for Oncology
- eye sparing surgery
- molecular genetic analyses

Uveal melanoma



Conjunctival melanoma



Intraocular lymphoma

Patient care pathway

The Royal Liverpool and Broadgreen University Hospitals NHS Trust

Clinical lead for LOOC - Prof H Heimann
Primary uveal melanoma
Prognostic testing and risk stratification

High risk

Clatterbridge Centre for Oncology NHS Foundation Trust

Oncologists – Mr E Marshall/Mr J Sacco
Clinical trials

Resectable liver metastases

Aintree University Hospitals NHS Foundation Trust

Liver surgeon – Mr S Fenwick,
Metastatic liver lesions

Liverpool Ocular Oncology Research Group

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Welcome

Athena SWAN Charter for women in science

The Liverpool Ocular Oncology Research Group's (LOORG's) mission is to conduct high quality basic, translational and clinical research into the pathogenesis and treatment of adult ocular tumours that will improve patient care and survival.

The Liverpool Ocular Oncology Research Group was established by Professor Sarah Coupland and Professor Bertil Damato in 2006. Prof. Coupland has since lead the basic science and translational research portfolio, in addition to being a Consultant Pathologist at the Royal Liverpool University Hospital.

A major strength of the LOORG is the close collaboration between ocular oncology clinicians (Lead, Professor Heinrich Heimann), pathologists and basic scientists (Dr Sarah Lake and Dr Helen Kalirai) which ensures that the research we conduct addresses the key questions that will bring about improved survival and quality of life for ocular oncology patients.

This website is both for patients who wish to know more about the research that is being conducted by the Liverpool Ocular Oncology Group and for researchers who wish to explore the research interests and expertise within the group.

Fight for Sight
Pioneering eye research

nwcr
NORTH WEST CANCER RESEARCH

CANCER RESEARCH UK

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Liverpool Ocular Oncology Biobank

- Research Tissue Bank without generic ethical approval.
- Ethically approved by National Research Ethics Service (2011).
    - CI: Professor Sarah Coupland
    - Biosample custodian: Dr Helen Kalirai
- Sponsored by University of Liverpool
- Local approvals in place at:

The Royal Liverpool and Broadgreen University Hospitals NHS Trust

Clatterbridge Centre for Oncology NHS Foundation Trust

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Liverpool Ocular Oncology Biobank – Mission statement

To centralise the collection, storage and distribution of high quality biosamples for further use in basic and translational cancer research for ocular tumours.

To enable the most important research that will make a difference to ocular oncology patients in our lifetime.

OcuMelUK

MELANOMA RESEARCH FOUNDATION

CURE OM

Ocular Melanoma

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The Royal Liverpool and Broadgreen University Hospitals NHS Trust

Treatment of primary ocular tumour

Histology and molecular pathology

Tumour tissue, aqueous, vitreous, RNA, DNA, isolated cells, normal choroid, whole blood, serum, plasma.

Clatterbridge Centre for Oncology NHS Foundation Trust

Screening of high risk patients

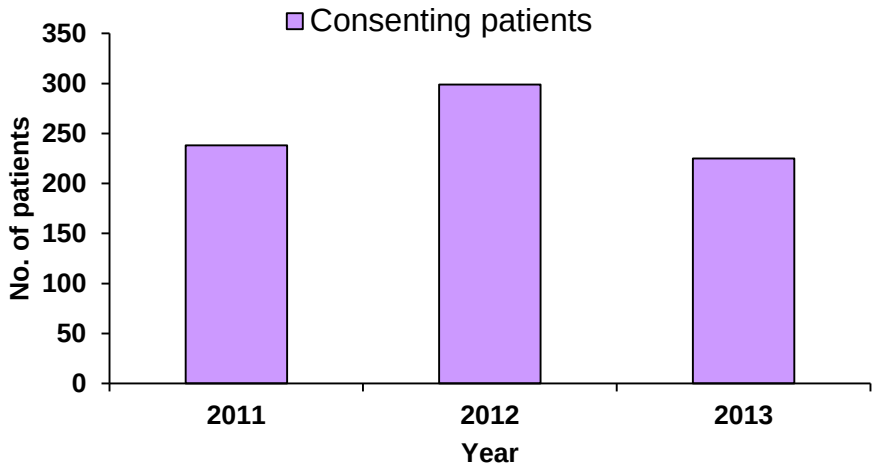
Whole blood, serum, plasma.

Aintree University Hospitals NHS Foundation Trust

Surgical removal of metastases

Metastatic tumour material, whole blood, serum, plasma.

Biosamples



- Frozen primary tumour material - 450 donors
- Isolated DNA/RNA - >600 donors
- Vitreous fluid – 112 donors
- Subretinal fluid – 39 donors
- Isolated tumour cells – 48 donors
- Blood - >700 donors
- Secondary tumour material – 44 donors

How is this resource currently supporting translational research in the Liverpool Ocular Oncology Research Group?

Molecular pathogenesis of uveal melanoma

- Molecular characterisation
- High-resolution methods

- Influence on behaviour of uveal tumours

- Elucidation of function and mechanism of action

- Druggable targets?

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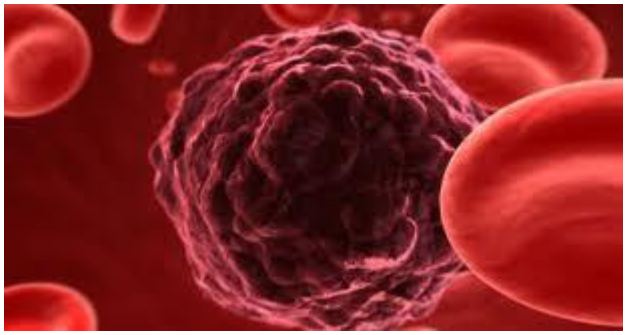
Identification of biomarkers of metastatic disease in uveal melanoma using proteomic analyses.

Blood borne biomarker(s) that predict the presence of metastatic disease in UM patients – “liquid biopsy”



Circulating tumour cells

Circulating free DNA

Exosomal proteins

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LOORG publications

Lake SL, Damato BE, Kalirai H, Dodson A, Taktak AFG, Lloyd BH, Coupland SE. Single Nucleotide Polymorphism Array (aSNP) analysis of uveal melanomas reveals that amplification of CNKSR3 Is correlated with improved patient survival. American Journal of Pathology, 2013 Jan 25.

Angi M, Kalirai H Coupland SE, Damato B, Semeraro F, Romano MR. Proteomic analyses of the vitreous humour. Mediators of Inflammation, 2012:148039.

Lake SL, Kalirai H, Dopierala J, Damato BE, Coupland SE. Comparison of formalin-fixed and snap-frozen samples analysed by multiplex ligation-dependent probe amplification for prognostic testing in uveal melanoma. Investigative Ophthalmology and Visual Science, 2012 May 4;53(6):2647-52.

Lake SL, Jmor F, Dopierala J, Taktak AFG, Coupland SE and Damato B. Multiplex ligation-dependent probe amplification of conjunctival melanoma reveals common BRAF V600E gene mutation and gene copy number changes. Investigative Ophthalmology and Visual Science, 2011 Jul 29;52(8):5598-604

Damato BE, Dopierala J, Coupland SE. Genotypic profiling of 452 choroidal melanomas with Multiplex Ligation-Dependent Probe Amplification. Clinical Cancer Research, Dec 15;16(24):6083-92.

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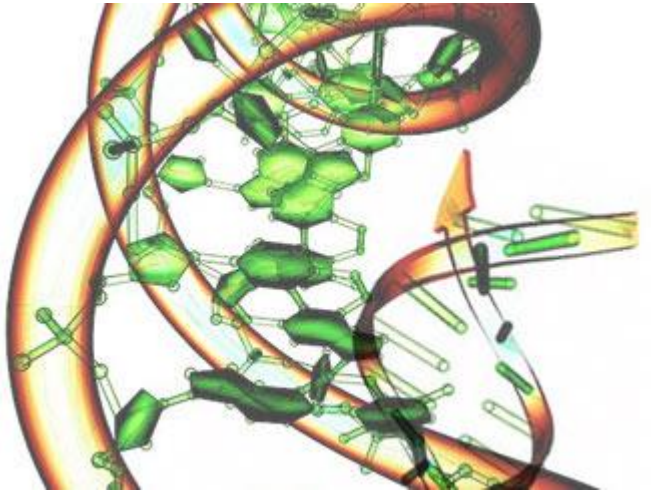
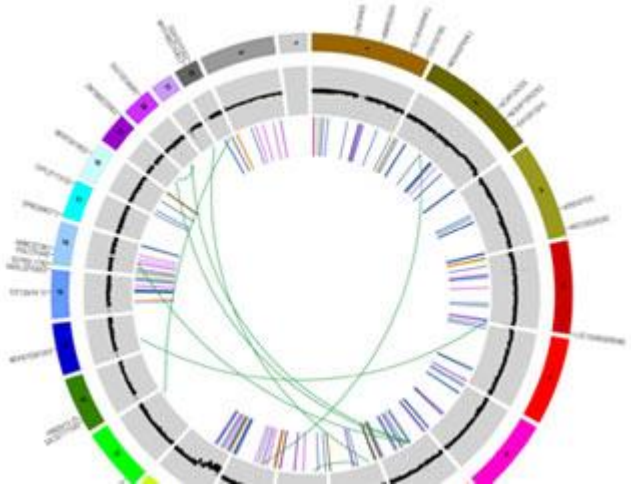
The Cancer Genome Atlas

A comprehensive and coordinated effort to accelerate our understanding of the molecular basis of cancer.

The comprehensive data generated by TCGA's network approach are freely available and widely used by the cancer community.





What do we need to do next?

- Maintain the current collections but improve collection of metastatic lesions
- Improve data collection from CCC and Aintree
- Maintain the standards of sample collection, processing and storage
- Continue with collaborative opportunities
- Keep listening to the patients

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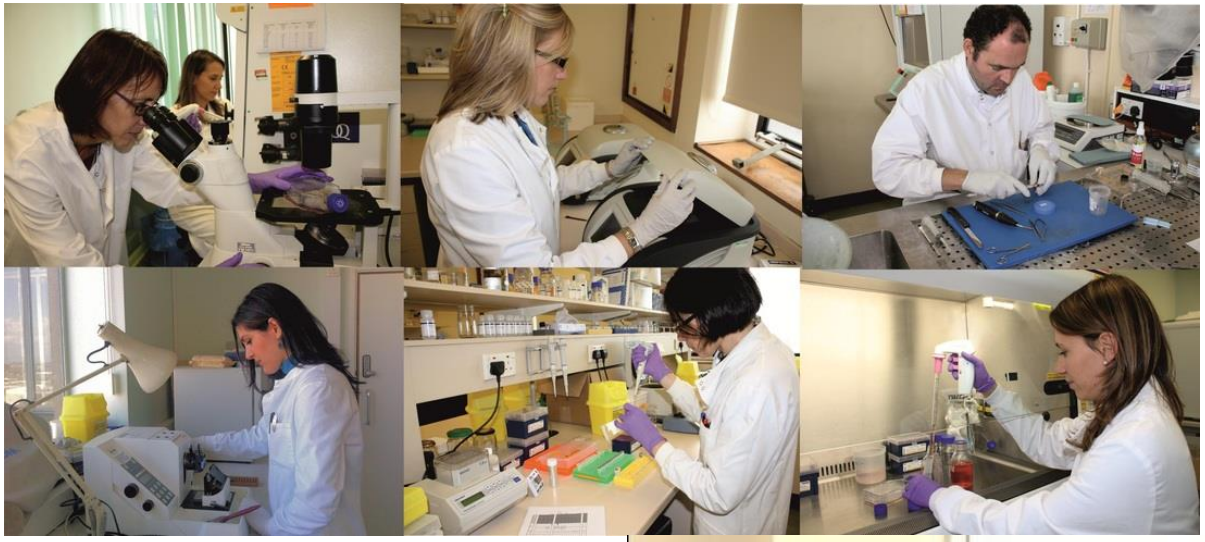

Thank you