Welcome
32nd UK Cancer Cytogenetics Group Meeting
Programme

2010 European Guest Lecture
Leukaemia Lymphoma Research/NECCR

Genetics of T-ALL

Professor Jan Cools, Leuven University, Belgium
Guest Lectures

New genetic findings in MPN
Professor Nick Cross, University of Southampton

Characterisation of structural variation in breast cancer genomes using paired-end sequencing on the Illumina Genome Analyser
Dr Phil Stephens, Sanger Centre, Cambridge

Prognostic significance of 13q deletions in CLL
Dr Jon Strefford, University of Southampton
Guest Lectures
Centre for Haemato-Oncology

Biology Update of Lymphoma

*Dr Chris Bacon*

Fusion genes as potential therapeutic targets

*Dr Olaf Heidenreich*

Northern Institute for Cancer Research
Guest Lecture
North East Children’s Cancer Research Fund

New perspectives in treatment of childhood brain tumours

Professor Steve Clifford
Northern Institute for Cancer Research,
Leukaemia Research Cytogenetics Group

Sarra Ryan

Janette Storr
Achievements 2009

Childhood ALL


Childhood ALL: 9p


ALL Book Chapter

Adult ALL


T-ALL


Childhood AML


Adult AML


AML Book Chapter

IGH and CRLF2


Ongoing projects
Complex karyotypes in AML

- Classification of AML into 54 cytogenetic groups (729 children and 5,876 adults)
- Complexity had no impact on survival in children
- In adults complex karyotype has been redefined as 4 or more unrelated abnormalities
- Cytogenetics is being used in AML 17 as the basis of a risk score which includes age and other clinical features.
- In the process of analysing aCGH profiles of patients with complex karyotypes to determine an appropriate screen for accurate classification
- High hyperdiploidy in AML classed as complex or not!
iAMP21
intrachromosomal amplification of chromosome 21

• Further characterisation of iAMP21
  – Genome wide aCGH, FISH, mutation screening (ASH 2009 Vikki)

• Clustered breakpoints on chromosome 21 (PDE9A) (Paul)

• Deep sequencing (Phil Stephens, Sanger)

• International study (Childhood ALL Working Group, “Ponte de Legno”): cytogenetics and clinical features.
“Other” 40-50 group

• Defined as
  – Not high hyperdiploid
  – Not near-haploid or low hyperdiploid
  – No established chromosomal abnormality

• Studies
  – aCGH/SNP arrays (Vikki)
  – Micro RNA (Vikki)
CRLF2

• Clinical interest in this gene
• Wanted to establish incidence, association with other chromosomal abnormalities and prognosis
• Carried out FISH screening on 1000 childhood BCP-ALL
• Lisa to give details
IKZF1, other B-cell differentiation genes and CRLF2

• Since Mullighan paper in 2007: interest in these genes for incidence, association with other abnormalities and prognosis
• Developed a MLPA kit with MRC Holland to cover these genes and others
• Conducted a pilot study (GCC submitted)(Claire)
• In the process of screening >460 Ph negative adult ALL patients from UKALLXII
• Preparing to screen 1500 children from ALL 2003
New studies

• ALL 2003 (BCP-ALL) Vikki, Claire, Sarra
  – MLPA for B cell differentiation, cell cycle control genes and CRLF2
  – High throughput sequencing for mutations in leukaemia associated genes:
    • lead to constitutive activation of RAS signalling,
    • impairment of B cell development
    • disruption of P53/RB1 signalling
    • JAK family members
  – 60K customised arrays

• Input into ALL 2010 (Anthony for details)
New studies

• ALL 2010: T-ALL and T-NHL
  – MLPA for known gains and losses supplemented by FISH
    • Deletions: TAL1, NF1, PHF6 (Xq), LMO2, CDKN2A, 6q
    • Gains: MYB, NUP214-ABL
    • Translocations: TCR, TLX3

• Pilot study in ALL 2003 (Claire and Nick Bown)
  – DNA on 48 patients
New studies

Childhood B non Hodgkin Lymphomas (Vikki, Chris Bacon)

New International trail

238 B-NHL, BL 76%, BL-like 8%, DLBCL 13%

- MYC, +1q, +7q, del(13q)
- aCGH on >40 frozen samples from UK CCLG cell bank

Specific cytogenetic abnormalities are associated with a significantly inferior outcome in children and adolescents with mature B-cell non-Hodgkin’s lymphoma: results of the FAB/LMB 96 international study

Leukemia (2009) 23, 323–331
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ONCOGENOMICS
Development of high throughput *in vivo* oncogenomic screening strategies in acute leukaemia

- 2.25 million Euros for 5 years
- Paul Sinclair
- Technician and PhD student
Our thanks to all for your continuing support