



First Annual Symposium of the
Luxembourg Bioinformatics Network
LuciLinX

16th October 2008 - 09.00 - 18.00

Chamber of Commerce - Conference Centre - LUXEMBOURG - KIRCHBERG

Bioinformatics at CRP-Santé



Overview of CRP-Santé



The Centre de Recherche Public de la Santé (Public Research Centre for Health) is a public institution for **fundamental, applied, clinical and industrial research** in the **domain of health care and public health**.

- 250 collaborators in 2008
- More than 100 ongoing research projects



Research Departments at CRP-Santé



- Department of Immunology
 - **Laboratory of Immunology**
- Department of Virology, Allergology and Immunity
 - Laboratory of Plant Molecular Biology
 - **Laboratory of Retrovirology**
 - Laboratory of Immunogenetics and Allergology
 - Laboratory of Toxicology
- Department of Oncology
 - Laboratory of Experimental Hemato-Oncology
 - **Microarray Center**
 - Laboratory of Molecular Pathology
 - **Norlux Neuro-Oncology Laboratory**
- Department of Cardiovascular Diseases
 - **Laboratory of Cardiovascular Research**
- Department of Public Health
 - Centre for Health Studies
 - Laboratory of Psychiatry
 - Food safety
- Department of Clinical and Epidemiological Investigation
 - Center created September 2008

Norlux Neuro-Oncology

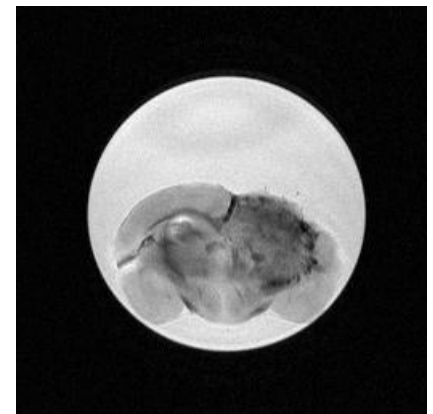
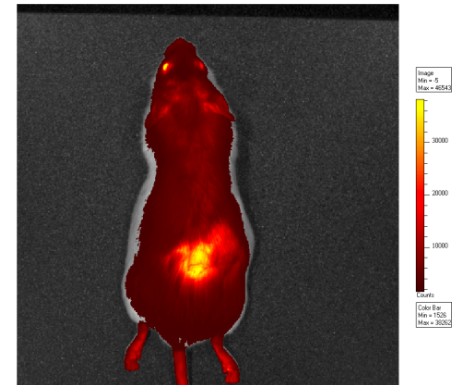


- **High throughput proteomics** analysis of tumors (quantitative MS, iTRAQ based and label free)
 - Bioinformatics Analysis: GPS (Applied Biosystems), MS Excel, **J-Express** (coll. K. Petersen, Bergen)
 - Pathway analysis: Ingenuity, freeware (GO, KEGG, FatiGO, J-Builder...)

collaborations: K. Petersen (Bergen), C. Jimenez (Amsterdam),
Microarray Center (CRP-Santé)

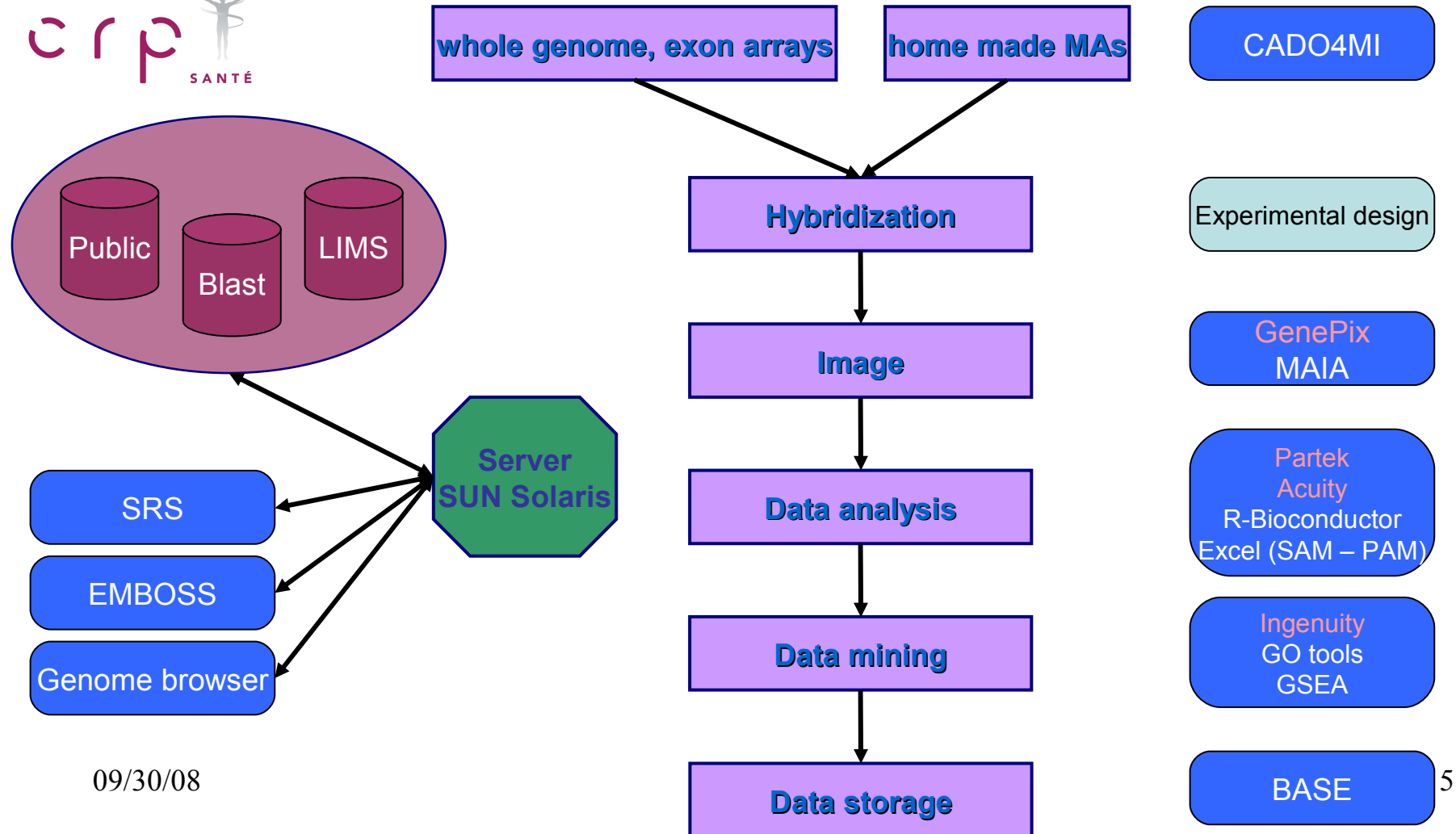
- ***In vivo* imaging** of brain tumors in small animals using MRI and optical imaging
 - Bruker Pharmascan 7T, IVIS Lumina (Xenogen Caliper LS)

collaboration: Frits Thorsen (Bergen)





Microarray Center

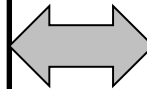




Laboratory of Cardiovascular Research

Translational research

- Prognostic biomarker discovery
- e.g. prediction of clinical outcome after myocardial infarction
- *Key projects:*
 - LUCKY* (Biosignatures of whole blood cells to predict the occurrence of heart failure after myocardial infarction)
 - CRISTAL* (Study of the relation between activation of inflammation in brain-dead organ donors and graft quality)
 - CASHMERE* (Effects of atorvastatin on extracellular matrix turnover and the biology of circulating leukocytes)
 - SAGHEN* (Use of whole-genome expression profiles of blood cells to predict the occurrence of a vasospasm after subarachnoid haemorrhage)
 - NORTH POLE* (Biosignature to predict outcome after hypothermia for patients surviving cardiac arrest)



Integrative bioinformatics

- “Omic” data (e.g. gene expression, SNPs) and clinical information analysis
- Machine and statistical learning
- Integration of quantitative and qualitative classification models
- Integration of hypothesis- and discovery-driven research approaches
- e.g. Combination of gene expression, protein-protein interaction networks, and transcriptional regulatory networks for biomarker discovery and clinical outcome prediction

Bioinformatics team:

Francisco Azuaje, PhD

Celine Yvorra, MSc 6



Department of Immunology



CENTRE DE RECHERCHE PUBLIC



Virology

- Study of antigens, cells and cellular mechanisms interfering with immune responses to viruses, environmental factors and vaccines
 - Immunology and virulence of viruses, genetic diversity
 - Vaccine immunology
 - Surveillance of viral infections
- Phylogeny, Sequence alignment: ClustalW, MEGA3, Seqscape, Bioedit
→ Gene Databases: Genbank (Genome, Taxonomy)

Psychoimmunobiology

- Interactions between the immune system and neuro-endocrine system
 - Cytokines in neuropsychological disorders
- VectorNTI, Haploview, Pymol, R
→ Transcription Factor Databases: Transfac, DBTSS

Proteomics & Imaging

- Platform acting as support for various projects. Development of new methodologies. Platform centric projects in virology (Protein characterisation and PTM identification).
- Protein identification by spectrogram analysis using FlexAnalysis → Biotoools (peak list generation) → Mascot DB (Swissprot, NCBI nr, MSDB)
→ Image processing using NIH ImageJ, SVI Huygens Deconvolution Software and in-house developments.



Retrovirology Laboratory



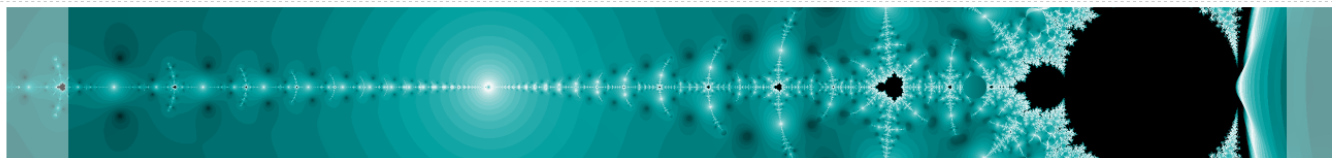
- LIMS development (HIV-1/2, HCV & HBV; routine, patient, virology and statistical modules; PostgreSQL database management system, PHP frontend running on Apache under Linux operating system)
- Epidemiology (HIV & HCV; R – software environment for statistical computing)
- Phylogenetics (Paup, RAxML, Beast, ...)
- Software development (Sequence editing software for the ART-A project, Java)
- Development of a new subtyping approach (PPM based)
- Recombination analysis on HCV (beginning next year)



http://lucilinx.lu



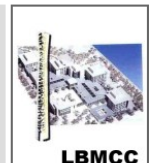
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Members



Partners

Abstract added

The webmaster was able today to add the abstract kindly provided by **Ilya Shmulevich** related to his talk: **Modeling and Inference of Transcriptional Regulatory Networks**.

September 17th, 2008 | Category: News, Symposium | Comments Off

Symposium advertised on LuxInnovation agenda

The LuciLinX symposium is now advertised on **LuxInnovation's Agenda**, and has been sent the first time last Friday in their newsletter to all Agenda subscribers. This link also allows you to fill in the registration document, in the "download documents" section of the agenda record.

September 15th, 2008 | Category: Uncategorized | Leave a comment

Programme update

A last-minute change has been applied to the programme, of which you can find an updated version on the left.

The symposium thus welcomes Bengt Persson of Linköping University and Karolinska Institute, who will present the ELIXIR - European Life Sciences Infrastructure for Biological Information project during the afternoon "invited talks" session.

The programme is then considered final - definitely totally final 😊

September 15th, 2008 | Category: News, Symposium | Comments Off

Abstracts online

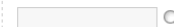
Abstracts of most of the talks are now online.

September 9th, 2008 | Category: News, Symposium | Leave a comment

September 8, 2008: Symposium programme online

The advanced programme of the 16 October symposium is now online. A downloadable PDF version will follow soon.

September 8th, 2008 | Category: Uncategorized | Leave a comment



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Conclusion



- Diversity of expertise and interests in bioinformatics is available at CRP-Santé
- Emphasis is placed on the development of methods and applications for different areas of translational biomedical research