Knowledge Management in UBIOPRED

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UBIOPRED Overview

• Unbiased Biomarkers for the Prediction of Respiratory Disease Outcomes
  – Innovative Medicines Initiative call topic: *Understanding Severe Asthma*
  – 10 Pharma, 20 Academic Medical Centres, 10 other

• Key Highlights
  – Publication of consensus papers defining 1) severe asthma and 2) systems medicine approach
  – 1st patient recruited into the clinical study last week
  – Cross Industry Data Sharing
U-BIOPRED Aim: Handprint

Systems Biology

- Proteomics
- Metabolomics
- Clinical/Physiological/Morphological
- Genomics/Transcriptomics

Patient oriented outcomes

Pre-clinical
- Cellular Models
- Animal Models

In vivo challenge

Clinical Trials
- New & Re-evaluated Drugs

Standard Therapy

Disease Progression

Large Cohort

Imperial College London
Three challenges in for Knowledge Management UBIOPRED

• Organisational Complexity
  – Complex consortium

• Scientific Complexity
  – End to End translational Study

• Data Complexity
  – Clinical, Omics (7), Imaging, Histology
Knowledge Production Process

**Process:**
- Patient Data
- Samples
- Omics Data
- Knowledge
- Delivery

**Procedure:**
- Protocol
- SOP (SRM)
- Data Analysis Plan
- KM Manual

**Technology:**
- eCRF
- LIMS
- Files
- KM
- Others?
Knowledge Management Architecture

IC Cloud (Virtualisation Layer)

Physical Layer (Imperial Based Data Centre)

Virtual Machines

- Tran-SMART
- Analytical Registry
- Analysis Engine
- Raw Data Store
- Data Processing Engine
1. Transform and Load Clinical Data into TranSmart
2. Transform and Load Inventory Data into TranSmart
3. Upload and Index Raw Data
4. Load processed Omics Data into Transmart using pre-processing functionality in R
5. Update Completion Information in Analytical Registry
6. TranSmart application accesses datamart and R server
TranSmart use in UBIOPRED ECLIPSE pilot

- IMI in action (J&J’s Software, GSK’s ECLIPSE data, academic execution)
- 3000 Patients, 1800 Clinical Attributes, Blood & Sputum Samples
- Data to be provided in 3 Tranches dependent on success
  - Tranche 1: Clinical Data for 220 Patients that have micro-array data
  - Tranche 2: The associated micro-array data for 220 group
  - Tranche 3: Longitudinal data for micro-array data for 220 group
  - Tranche 4: Full Clinical Data for all patients

- 15 days total from install to deploy to users
Recruitment Analysis – Built in less than 5 minutes
Tools to find hypothesis, people and data within the project

Activity of people in the project

UBIOPRED Analytical Register

for Managing Study Research

This site aims to build on the Knowledge Management Infrastructure of UBIOPRED to help users collect, synthesis and report investigations in UBIOPRED.

Recent Changes:
- Seasonal
  - Edited by: Asrowe
  - On: 8 November 2010 13:30:49

Pollution (Pediatric)
- Edited by: Asrowe
- On: 8 November 2010 12:42:16

Pediatric Exacerbations
- Edited by: Asrowe
- On: 8 November 2010 12:42:09

Passive Smoking
- Edited by: Asrowe
- On: 8 November 2010 12:42:00

Nutritional Status (Pediatric)
- Edited by: Asrowe
- On: 8 November 2010 12:41:51... further results

There are a number of different starting points

Investigations
- Browse:
  - All Investigations
  - Ongoing Investigations
  - Complete Investigations
  - Propose New Investigation

Investigators
- View Recent Activity History

Data Sets
- Browse Data Set

This page was last modified on 8 November 2010, at 13:35. This page has been accessed 49 times.
Drill Down through Study Metadata

Browse data: UBIO Investigations

UBIO Investigations
Click on one or more items below to narrow your results.

- Investigation Category:
  - Biomarkers (7)
  - Clinical (16)
  - Genotypes (1)
  - Inflammation/remodeling (4)
  - Paediatric (15)
  - Proclinical (9)
  - Pysiological (2)
  - Virus (2)

- Investigators:
  - Ana Sousa (65)
  - Anthony Rowe (65)
  - Peter Stork (64)

- Life Cycle:
  - Ongoing (1)
  - Proposed (64)

Showing below up to 65 results starting with #1.

View (previous 250 | next 250) (20 | 50 | 100 | 250 | 500)

A
- ASM phenotypes
- Adherence
- Adherence (Pediatric)
- Age of Onset
- Age of Onset (Pediatric)
- Airway Location
- Airway Location (Pediatric)
- Antenatal
- Asprin
- Asprin (Pediatric)

B
- BALT
- BHR
- Biomaker Stability

F cont.
- Fluctuation analysis

G
- GWAS
- Gender
- Gender (Pediatric)

H
- Health Utilization

I
- Immunohistochemistry
- Inflammatory phenotypes
- Influence of pollution
- Irreversibility
- Irreversibility (Pediatric)

O cont.
- Oxidative stress

P
- Passive Smoking
- Pediatric Exacerbations
- Persistence
- Pollution
- Pollution (Pediatric)

S
- Seasonal
- Small airways
- Smoking
- Smoking (Pediatric)
- Steroid sensitivity
Details built up collaboratively

Critically linking back to TranSmart
Three challenges in Knowledge Management UBIOPRED

- **Organisational Complexity**
  - Analytical Registry

- **Data Complexity**
  - TranSMART

- **Scientific Complexity**
  - New analytic methods under Development