EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

Minutes WG2 Kick-off Meeting (Action BM1204)

28 November 2013
2:00 p.m. – 6:00 p.m.
Spanish National Cancer Research Centre (CNIO)
Madrid, Spain

Participants: Kristel Van Steen (Belgium), Nuria Lopez-Bigas (Spain), Eduardo Gonzalez Couto (Spain), Isabel Cuesta (Spain), Stephan Ossowski (Spain), Aldo Scarpa (Italy)

Excused: Joerg Hoheisel (Germany), Nuria Malats (Spain), Ivo Gut (Spain), Alfonso Valencia (Spain), Anwar Rayan (Israel), David Gonzalez (Spain)

1. Overview of the Action

Kristel gave a brief overview of the Action

2. Overview of WG1

Kristel gave an overview of the tasks and deliverables for WG2. She gave a motivation for its existence and explained the delayed organization of the kick-off meeting. The non-response rate to invitations to participate was one of the main reasons. An action plan was discussed to reach the unreachable (see Supporting Document 1 and 2: Non-responders will be re-contacted by COST members who personally know the targeted individuals)

3. Work plan

Kristel presented the specific tasks to be completed over the four years of the Action, in particular:

1) WG2 Meetings (April 2013 and November 2013)
2) Work plan for 2014 (+)
3) Identify / prioritize opportunities of research and for funding
4) Establish contact with other consortia (i.e., ICGC, ---) and SMEs and explore opportunities for collaboration
5) Short-Term Scientific Missions (STSM)

6) Biannual internal progress report and annual report
7) Common guidelines to apply technologies and to integrate omics data in PDAC research
8) (e)Publication / CD / WEB

For all of these items, it was discussed what had already been done and/or a proposal was discussed to proceed. The proposal plan, included as Supporting Document 1, was taken as a template to initiate discussions and to come to a prioritization of the aforementioned deliverables in year 1. A consensus was reached regarding the deliverables to prioritize in year 1. These are underlined in the above list.

Special attention was given to discuss "communication" within WG2 and to come up with a more transparent PR of WG2:

- Modi Operandi within WG2:
  - Telecons using Go2meeting software: 1 in Dec (after mid December; the official release of Horizon 2020 calls), 1 in Jan, Febr = WG2 in vivo meeting; after year 1: every 2-3 months a telecon with all available WG2 members
  - Co-leaders may have intermittent meetings to discuss WG2 related issues
  - For all correspondence with WG2 leader: co-leaders are put in cc
  - Google docs facilities are used for document sharing and to build a repository of information for future reporting. Facilities may need to be revised as WG2 groups or activities take on different natures
  - Organization of national working groups (young and senior members)
- Transparency and PR:
  - Create LinkedIn interest group on "integrated omics in pancreatic cancer". Helps in identifying new members; triggers interest of patients / patient groups.
  - Identify / explore other opportunities (WG2-page, Twitter)

Additional outcomes of the discussions to come to a final work plan for year 1 are summarized in Supporting Document 2. This document was also taken as a basis for the first WG2 meeting on 29 November, 2013.

4. Meeting in February

To compensate for the delayed kick-off meeting (hence part of deliverable 1 not being met), a proposal was made to organize a second face-to-face WG1 meeting in February

2014. It will be confirmed with Joerg Hoheisel whether this meeting can take place in Heidelberg and/or whether support can be obtained to organize it in conjunction with a first training workshop. More details in Supplementary Document 1 and 2.

SUPPORTING DOCUMENT 1

EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

WG2 KICK-OFF MEETING

COST Action BM1204

28th November 2013 – CNIO, Madrid

WG2 leader: **Kristel Van Steen** (Liège, Belgium).

Co-leaders: **Joerg Hoheisel** (Heidelberg, Germany) and **Nuria Lopez-Bigas** (Barcelona, Spain)

OUTLINE

1 Overview of the Action

2 Presentation of WG2

- General objectives
- Deliverables
- Human resources to date
- Identification of attention points

3 WG2 activities

- **Work plan**
  - What has been done?
  - What needs to be done?
  - What can be done?

- **Reaching out: defining strategies**
  - Knowledge OUT: STSM and training schools
  - Knowledge IN: Other COST programs

3 WG2 activities (continued)

- **Funding**
  - Spin-offs of new national program proposals / projects
  - Spin-offs of new international program proposals / projects

4 WG2 in action

- Proposed modi operandi

5 Consolidate

WHO IS WHO?

Kristel Van Steen, PhD[2]

- Biostatistics – Biomedicine – Bioinformatics
- Affiliations:
  - Systems and Modeling Unit, Montefiore Institute, University of Liège, Belgium

  - Bioinformatics and Modeling, GIGA-R, Liège, Belgium

SYSTMOD @ Montefiore

- Systems and Control
  - Collective Motions, Dynamics and Control of Juggling, Optimization on manifolds, Rhythms and oscillators, Nonlinear control (more info)
- **Stochastic Methods**
  - **Machine Learning: decision trees, bayesian networks, reinforcement learning, variance reduction**
  - Computer Vision: image classification, retrieval
  - Monte-Carlo methods: simulation, optimization, variance reduction
- **Bioinformatics and System Biology**
  - **Analysis of biological data: proteomic, genomic, data mining, biomarker identification, gene selection**
  - Modeling of biological systems: Cardiac Rhythm Fluctuations, Sleep apnea syndrome
  - Modeling and simulation of the thalamocortical circuitry
- Power Systems
  - Stability: voltage stability, transient stability, small-signal stability
  - Security: probabilistic security assessment, preventive security, emergency control
  - Energy markets: modeling, simulation

SB&CB @ GIGA-R (+/- 100 individuals)

[2014 + ; Head]

- Laboratory of molecular engineering and genetic engineering
- Laboratory of histology and mammalian cell culture
- Laboratory of mass spectrometry
- **Research unit of systems and modelling**
  - **Algorithms and stochastic methods**
  - Computational systems biology
  - **Bioinformatics – Statistical Genetics**
  - Systems and control

1 Overview of the Action

Our COST Action in a glance

e-COST

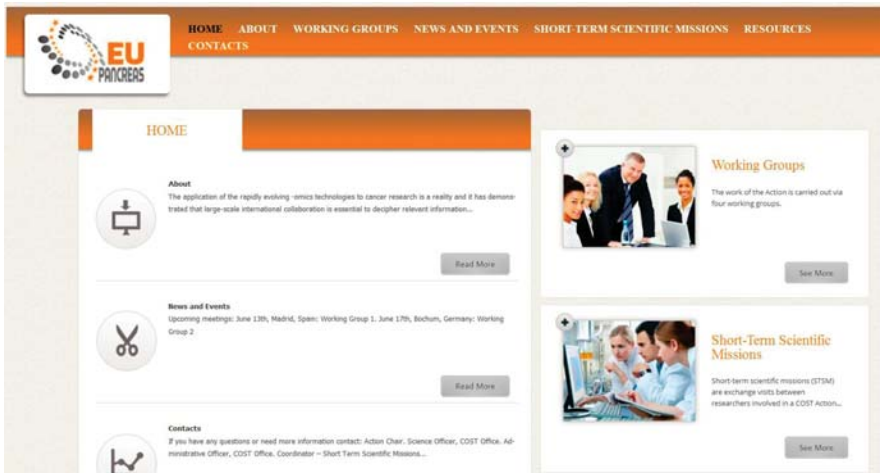
COST Action Overview

Biomedicine and Molecular Biosciences
COST Action BM1204
An integrated European platform for pancreas cancer research: from basic science to clinical and public health interventions for a rare disease

Action status:	Stand By				
Start Date:	14 December 2012	**End Date:**	13 December 2016	**Prolongation date:**	
CSO Approval Date:	7 June 2012	**Entry Into Force:**	16 July 2012	**1st MC meeting:**	14 December 2012

The action will end on Tuesday, December 13, 2016

Our COST Action in a glance: htpp://eupancreas.com



What is a COST Action?

- Request for transparency – example via the MULTITUDE Project (http://www.multitude-project.eu/what-is-multitude.html)

- COST – European Cooperation in Science and Technology: European instrument supporting cooperation among EU scientists and researchers
- COST provides financial support for **cooperation efforts** of scientific groups across Europe and the coordination of these research networks called "Actions"
- The support covers the **costs of networking activities** such as meetings (e.g. travel, subsistence, local organizer's support), conferences, workshops, short-term scientific exchanges, training schools, publications and dissemination activities

What is a COST Action?

- COST **does not fund the research** itself (http://www.cost.eu/service/faq)
- A given COST Action contains:
  - Possibly **national working groups**, first step of coordination between researchers and research institutions (cfr. Liège)
  - **Management committee** (MC) meetings (2 officially nominated representatives per signatory COST country + representatives from non-COST countries that have been approved by the Committee of Senior Officials CSO)

What is a COST Action?

- A given COST Action contains:

  - **Working Group (WG)** meetings: open to the MC members, to members of non-COST countries and to invited experts. The non-Management committee members have to be proposed by a Management committee member and approved by the Management Committee.
  - **Short Term Scientific Missions** (STSM): a young researcher of a COST action member spends between 5 days and 6 weeks in the lab of another COST action member. Reimbursed per day with a maximum.
  - **Workshops and seminars**, usually open to external people, in order to discuss broadly the content and to disseminate the results.

What is a COST Action?

- A given COST Action contains:

  - **Training schools** and research seminars to train 15-20 people.
  - **Evaluations and studies**: a small subcontract for a COST action member.
  - **Dissemination**: through web sites, leaflets, etc.
  - An annual progress **report** and working group reports

- The COST rules are available from
  http://www.cost.esf.org/participate/guidelines

How to join the COST Action?

For institutions of the 36 COST Countries

- If your country has not / has already accepted the Action's Memorandum of Understanding, but has not yet nominated its representatives:

  - Contact your COST National Coordinator (CNC) who can launch your country's participation in the Action / who can officially nominate you as a representative of your country to the MC committee.
  - It is also recommended that you inform the Chair of the Action.

For institutions of non-COST Countries

- COST encourages institutions from non-COST countries. Approval on a case-by-case basis. In general, no economic support for non-COST researchers

How COST works?

- A Memorandum of Understanding (MoU) provides the formal basis for any COST Action
- It is signed by the governments of the countries that wish to participate

(http://www.cost.eu/about_cost/how_cost_works)

MEMORANDUM OF UNDERSTANDING

Subject : Memorandum of Understanding for the implementation of a European Concerted Research Action designated as COST Action BM1204: An integrated European platform for pancreas cancer research: from basic science to clinical and public health interventions for a rare disease

Delegations will find attached the Memorandum of Understanding for COST Action as approved by the COST Committee of Senior Officials (CSO) at its 185th meeting on 6 June 2012.

Our general objectives

- Capacity building in order to **build a strong network** of European Centres to develop unified biobanks that store individual epidemiological and clinical information
- **Evaluate the applicability of selected omics technologies** to identify chemical, epigenetic, genetic, and molecular markers to be utilized in the public health and clinical setting.
- **Optimize methodologies** (epidemiological, statistical, omics-technology, and bioinformatics) **to integrate and interpret data**.
- **Unite and train young researchers** from different disciplinary backgrounds
- **Disseminate** the information gathered to the scientific community and increase public awareness about PDAC research needs and impacts

Our objectives translated

- Identify new modifiable **risk factors**, and other environmental, genetic and epigenetic risk factors
- Dissect the **molecular complexity through omics** technology and identify clinically relevant **disease sub-phenotypes**
- Identify reliable **predictive biomarkers** of early-stage as well as novel molecular targets for tailored therapies
- Identify **reliable** genetic, epigenetic and tumour-related factors associated with the prognosis
- Assess the potential **implementation** of the findings into public health and clinical settings.

2 Presentation of WG2

The WGs

- WG1 Research tool harmonization
- WG2 Integration of omics data
- WG3 Translational research
- WG4 PDAC patient management

Motivation for/of WG2

reviews
Annals of Oncology
Annals of Oncology 23: 570–578, 2012
doi:10.1093/annonc/mdr351
Published online 01 August 2011

New strategies and designs in pancreatic cancer research: consensus guidelines report from a European expert panel†

J.-L. Van Laethem[1]*, C. Verslype[2], J. L. Iovanna[3], P. Michl[4], T. Conroy[5], C. Louvet[6], P. Hammel[7], E. Mitry[8], M. Ducreux[9], T. Maraculla[10], W. Uhl[11], G. Van Tienhoven[12], J. B. Bachet[13], R. Maréchal[14], A. Hendlisz[15], M. Bali[16], P. Demetter[1], F. Ulrich[17], D. Aust[18], J. Luttges[19], M. Peeters[20], M. Mauer[21], A. Roth[22], J. P. Neoptolemos[23] & M. Lutz[19]

[1]Gastrointestinal Cancer Unit, Hôpital Erasme, Université Libre de Bruxelles, Brussels; [2]Department of Hepatology, Universitair Ziekenhuis Gasthuisberg, Leuven, Belgium; [3]Institut National de la Santé et de la Recherche Médicale, Marseille, France; [4]Department of Gastroenterology and Endocrinology, University of Marburg, Marburg, Germany; [5]Nancy University and Department of Medical Oncology, Centre Alexis Vautrin, Nancy; [6]Digestive Surgery Department, Institut Mutualiste Montsouris, Paris; [7]Gastroenterology Department, Hôpital Beaujon, Clichy; [8]Medical Oncology Department, Institut Curie, Hôpital René-Huguenin, Saint-Cloud; [9]Digestive Oncology Department, Institut G. Roussy, Villejuif, France; [10]Medical Oncology Department, Hospital Vall d'Hebron, Barcelona, Spain; [11]Department of Surgery, St Josef-Hospital, Ruhr-University, Bochum, Germany; [12]Department of Radiation Oncology, Academic Medical Centre, Amsterdam, The Netherlands; [13]Department of Gastroenterology, Hôpital Pitié Salpêtrière, Assistance Publique-Hôpitaux de Paris, Paris, France; [14]Department of Gastroenterology and Hepato-Pancreatology, Gastrointestinal Cancer Unit, Hôpital Universitaire Erasme, Brussels; [15]Department of Gastroenterology, Institut J. Bordet, Brussels; [16]Department of Medical Imaging, Hôpital Erasme, Brussels, Belgium; [17]Department of General and Visceral Surgery, J. W. Goethe University Medical Center, Frankfurt; [18]Institute of Pathology, University Hospital Carl Gustav Carus, Dresden; [19]Caritasklinik St Theresia, Saarbrücken, Germany; [20]Department of Oncology, Universitair Ziekenhuis Antwerpen, Edegem; [21]European Organisation for Research and Treatment of Cancer Headquarters, Brussels, Belgium; [22]Department of Surgery, Clinic for Visceral and Transplantation Surgery, Hôpital Universitaire de Genève, Geneva, Switzerland; [23]Department of Surgery, University of Liverpool, Liverpool, UK

Received 20 May 2011; accepted 15 June 2011

Motivation for/of WG2

- Collection of tumour material and blood for translational research is warranted for all studied patients; preferably, core needle biopsies should be taken before treatment, also in patients with locally advanced disease and/or distant metastases participating in studies. Depending upon the study, tumour material should also be obtained after treatment. Biobanks should be set up using standardised operating procedures. Fundamental translational research with these tissues should be directed towards prognostic and predictive factors, response assessment and so on, specific for the study at stake. Not only the cancer cells but also the microenvironment should be taken into account. In addition, the biobanks should be used to find new pathways and eventually new targeted drugs. High-throughput *in vitro* systems and clever *in vivo* models should be used to increase the efficacy of bringing eventual new targeted therapies into clinical research.

- New strategies and design proposals are up to date?
- 2012 review paper shows little or no info on "omics" / "NGS"

WG2-specific objectives

1. **Optimization and standardization of methods for omics analysis** of pancreas tumoral and normal tissue samples
2. Establishment of **standardized approaches for omics data deposit**
3. **Identifying and documenting** available **algorithms for omics data integration**

   Issues to be considered include: the data high dimensionality - small sample size problem, the inherently noisy nature of the data, the stability and reproducibility of the models, the incorporation of domain knowledge.

How to best achieve progress on ALL objectives?

Interdisciplinarity to achieve the goals

Biostatistics, bioinformatics, machine learning, functional genomics, biomedicine, informatics, oncology, pathology, transcriptomics, epigenomics, computational cancer, molecular oncology, data management, genomics, guidelines development, statistics, epidemiology, statistical genetics, computational biology, visualization, digestive oncology, computer science, integrative biology

Inviteds	Country
Kristel Van Steen	BE
Eric Van Cutsum	BE
Darlene Goldstein	CH
Joerg Hoheisel	DE
Ralf Herwig	DE
Irene Esposito	DE
Nura Malats	ES
Nuria Lopez-Bigas	ES
Ivo Gut	ES
David Pisano	ES
E Eduardo Gonzalez Couto	ES
Alfonso Valencia	ES
Isabel Cuesta	ES
Stephan Ossowski	ES
Dr. Anwar Rayan	IL
Claudio Bassi	IT
Aldo Scarpa	IT
Andrew Biankin	UK
Ewan Birney	UK
Alvis Brazma	UK

Others	Country
Van Laethem JL	BE
Peter Bühlmann	CH
Niko Beerenwinkel	CH
Manuel Hidalgo (Fatima Al-Shahrour) [WG3]	ES
Gonzalez_Pisano.David Pisano	ES
Irene Esposito [WG1]	GE
Jin-Young Jang (*)	KR
Matthias Merkenschlager	UK
Claude Chelala [WG3]	UK
Sandra Orchard	UK
David Whitcomb (*)	US
Chris Sanders (*)	US
Josh Stuart (*)	US

(*) interest groups

How to best build WG2 as an interdisciplinary mix of key players and young investigators?

WG2-specific deliverables

1. WG2 Meetings (April 2013 and November 2013)
2. Work plan for 2014 (+)
3. Identify / prioritize opportunities of research and for funding
4. Establish contact with other consortia (i.e., ICGC, ---) and SMEs and explore opportunities for collaboration
5. Short-Term Scientific Missions (STSM)
6. Biannual internal progress report and annual report
7. Common guidelines to apply technologies and to integrate omics data in PDAC research
8. (e)Publication / CD / WEB

3 WG2 activities (discussion)

Work plan

- What has been done?
- What needs to be done?
- What can be done?

Reaching out

- Defining strategies knowledge OUT
- Defining strategies knowledge IN

Funding

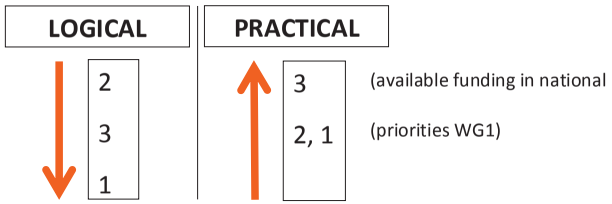
- New national program proposals/projects
- New international program proposals/projects

Work plan: what has been done?

1 Optimization and standardization of omics analysis

2 Standardization of omics deposit

3 Available algorithms and methods of analysis



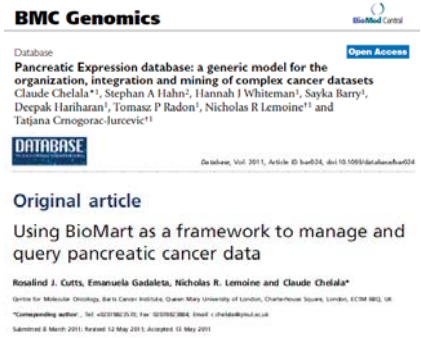
Work plan: what has been, needs to be, can be done?

2 Standardization of omics deposit

- Web-based Platform for Mining Pancreatic Expression Data sets

3 Available algorithms and methods of analysis

1 Optimization and standardization of omics analysis


BMC Genomics

Database

Open Access

Pancreatic Expression database: a generic model for the organization, integration and mining of complex cancer datasets

Claude Chelala*[1], Stephan A Hahn[2], Hannah J Whiteman[1], Sayka Barry[1], Deepak Hariharan[1], Tomasz P Radon[1], Nicholas R Lemoine*[1] and Tatjana Crnogorac-Jurcevic*[1]

DATABASE

Original article

Using BioMart as a framework to manage and query pancreatic cancer data

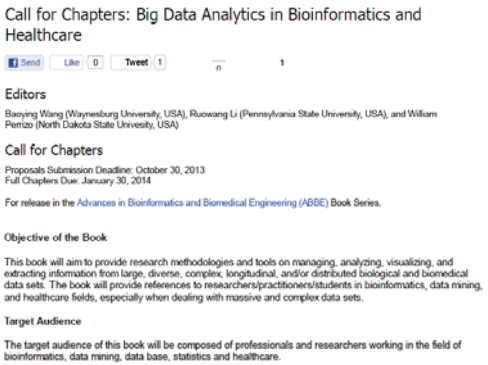
Rosalind J. Cutts, Emanuela Gadaleta, Nicholas R. Lemoine and Claude Chelala*

Work plan: what has been, needs to be, can be done?

2 Standardization of omics deposit

3 Available algorithms and methods of analysis

1 Optimization and standardization of omics analysis



Call for Chapters: Big Data Analytics in Bioinformatics and Healthcare

Send Like 0 Tweet 1

Editors

Baoying Wang (Waynesburg University, USA), Ruowang Li (Pennsylvania State University, USA), and William Perrizo (North Dakota State University, USA)

Call for Chapters

Proposals Submission Deadline: October 30, 2013
Full Chapters Due: January 30, 2014

For release in the Advances in Bioinformatics and Biomedical Engineering (ABBE) Book Series.

Objective of the Book

This book will aim to provide research methodologies and tools on managing, analyzing, visualizing, and extracting information from large, diverse, complex, longitudinal, and/or distributed biological and biomedical data sets. The book will provide references to researchers/practitioners/students in bioinformatics, data mining, and healthcare fields, especially when dealing with massive and complex data sets.

Target Audience

The target audience of this book will be composed of professionals and researchers working in the field of bioinformatics, data mining, data base, statistics and healthcare.

"Perspectives on Data Integration in Human Complex Disease Analysis"

Possible consortium paper?

Book chapter – motivation

- Dissemination (deliverable 8.)
- Body of contribution:
  - "Present your perspective on the issues, controversies, problems, etc., as they relate to theme and arguments supporting your position"
  - "Discuss solutions and recommendations in dealing with the issues, controversies, or problems presented"
- Fits into "start globally", then "do in-depth review":

Data pre-processing	Protein/RNA structure prediction
Data visualization	Genomics and proteomics
Data integration	System biology and pathways
Data Modeling	Database management
Data and text mining	Big Data Search Architectures
Ontologies construction	Scalability and Efficiency

Available algorithms and methods of analysis

- Taxonomy (what IS integrative analysis, …)
- Two paths (more?):
  - Methods/software tools that allow combining evidences from different separate analyses
  - Methods/software tools that allow an integrative (all-in-one) omics analysis
    - Association
    - Prediction
    - …

[**Note**: path 1 naturally accommodates omics analyses performed on different groups of patients/controls, whereas path 2 naturally assumes that omics data are available on a "sufficiently large" group of individuals]

Work plan: what has been, needs to be, can be done?

2 Standardization of omics deposit

3 Available algorithms and methods of analysis

1 Optimization and standardization of omics analysis

- Several acknowledged guidelines exist
  - MIAMI guidelines (Minimum Information About a Microarray Experiment): http://www.mged.org/Workgroups/MIAME/miame.html
  - MINSEQE guideline (Minimum Information about a high-throughput SeQuencing Experiment): http://www.mged.org/minseqe/

Similar ones on other omics?

Work plan: what has been, needs to be, can be done?

2 Standardization of omics deposit

3 Available algorithms and methods of analysis

1 Optimization and standardization of omics analysis

- Several publications /sites on the topic exist
  - Equator Network: overview of reporting guidelines (http://www.cochrane.org/about-us/evidence-based-health-care/webliography/books/reporting)

Bioinformatics for Omics Data : Methods and Protocols

Editor(s): Bernd Mayer[1]

Affiliation(s): (1),emergentec biodevelopment GmbH, Gersthofer Strasse 29-31 Vienna 1180 Vienna Austria

Series: Methods in Molecular Biology | **Volume No.:** 719

Print ISBN: 978-1-61779-026-3

Challenge: data (WG1) versus analysis (WG2)?

Work plan: Reaching out

Defining strategies

- Knowledge OUT:
  - STSM
    - One call behind us.
    - New call to be expected (?) with deadline in January 2014
    - Target audience: more career-advanced researchers … **WG2 input?**
  - Training schools
    - During "local" conferences (e.g., CSCDA 2014)
    - Link to existing Marie Curie Networks (e.g., Machine Learning for Personalized Medicine)
    - … **Ideas?**
  - Dissemination

Work plan: Reaching out

Defining strategies

- Knowledge IN:
  - Attract new members – **general info about COST benefits helps?**
  - Link to ELIXIR?
  - Link to other COST Actions – **which ones?**
  - Link to similar initiatives in the field of pancreatic cancer? (USA, Australie, Asia, … cfr **coordinator's efforts**)

Other suggestions?

(http://www.elixir-europe.org/about)

EMBL-EBI and ELIXIR

The European Molecular Biology Laboratory's European Bioinformatics Institute (EMBL-EBI) plays an important role in ELIXIR, including hosting the ELIXIR Hub. EMBL-EBI is an intergovernmental organisation supported by 20 member states and one associate member state.

ELIXIR's construction phase

In 2012, ELIXIR completed a five-year preparatory phase funded by the EU's Seventh Framework Programme as part of the European Strategy Forum on Research Infrastructures (ESFRI) process. In 2013, ELIXIR entered its construction phase, and leading researchers and institutions throughout Europe are working together to ensure that it is robust, forward-looking and sustainable.

ELIXIR

(http://www.elixir-europe.org/about)

Other Cost Actions

http://w3.cost.eu/fileadmin/domain_files/BMBS/Action_BM0801/mou/BM0801-e.pdf

"Few centres offer the central support required for data analysis, management and interpretation. However, the web-based "Gene Analysis Platform" (GAP), developed within the ELN for gene expression analysis, produces categorical results, quantitative information, survival-associated responses, and heat maps. Classifications can be made with an estimation of accuracy/statistical significance/confidence; lists comparisons, and even pathway analyses can be provided. Based on these web-based methods for integration of clinical and molecular data, specifically regarding anal
ysis of microarray data in leukaemia, the potential for further evolution and development of data management and analysis systems SNP, CGH, ChIP-on-chip, microRNA data, epigenetic profiling, proteomic data, high-throughput sequencing, whilst also applying standard biometric procedures to
AML and MDS, data can be seen"

WG5: Technologies for data integration

http://journal.embnet.org/index.php/embnetjournal/article/view/218

"COST (European Cooperation in Science and Technology) is one of the longest-running European instruments supporting cooperation, collaboration and orchestration among scientists and researchers across Europe working in the same field. Some of the organisers of the two EMBRACE workshops on 'Next Generation Sequencing' (NGS) saw this type of Action as exactly the right kind of mechanism to try to tame the data tsunami being generated by the furiously fast developing NGS technologies. Their aim was to tackle the bioinformatics challenges inherent in managing and analysing these data, and to support researchers who use NGS technologies but do not have direct access to the necessary underpinning bioinformatics resources. The history of the NGS initiative is short, but explosive. It is imperative for the life science community to be prepared for the enormous growth in NGS data, the challenges this presents, and the opportunities it affords. Recognising these issues, and the need for global cooperation, gave birth to the idea for this COST Action proposal; it developed into the concerted action of today. "

Work Plan: Funding

- Spin-offs of new national program proposals / projects

Feedback from members?

- Spin-offs of new international program proposals / projects
  - Groupe de contact (funding to have research meetings)
  - European Synergy Grant
  - Horizon 2020 (EU)
  - IMI (joint undertaking between the EU and the pharmaceutical industry association EFPIA → later in the COST time lines?)

Other?

4 WG2 in action

- **Modi operandi**
  - Maintenance of data base of "members" and "interest groups"

Who?

How?

  - Teleconferences

How frequent?

Skype? Phone? Other?

  - Shared documents

Is there a need?

DropBox? http://eupancreas.com? Other?

5 Consolidate

WG2 Specific deliverables

1. WG2 Meetings (~~April 2013~~ and November 2013)
2. Work plan for 2014 (+)
3. Identify / prioritize opportunities of research and for funding
4. Establish contact with other consortia (i.e., ICGC, ---) and SMEs and explore opportunities for collaboration
5. Short-Term Scientific Missions (STSM)
6. Biannual internal progress report and annual report
7. Common guidelines to apply technologies and to integrate omics data in PDAC research
8. (e)Publication / CD / WEB [___ : active/relevant for year 1 "reporting"]

1. WG2 Meetings (~~April 2013~~ and November 2013)

- Second year 1 physical meeting before 1 March 31 (!!), 2014
  - Date proposals?
  - Location: Germany (country of WG2 co-leaders)?

- Combine this meeting with a workshop / training
  - Where? Which partner organizes this?
  - Topic: integrated network analysis?
  - STSM's are encourages to attend
  - Open for COST members + other interested
  - In December: telecon to discuss organization (location, fees, etc)

2. Workplan 1 April 2014 – 31 March 2014

- Build up WG2 and its organization
  - Strategy to attract new WG2 members: mix of key players and young investigators
    - It is important to have a clear "standardized" message about how COST can be beneficial (for instance via the COST pancreas website)
    - WG2 in particular is highly research oriented and hence finding additional funding to support research (and to attract new members via the obtained research funding) is crucial [see later]

  - Modi operandi
    - Monthly telecons with available WG2 members
    - Who are members? Cfr list of inviteds and nr of non-respondents…
    - For all correspondence with WG2 leader: co-leaders are put in cc
    - Co-leaders may have intermittent meetings to discuss WG2 related issues

- Objective: Standardization of omics deposit
  - Contact Claude Chelala whether and how web-based Platform for Mining Pancreatic Expression Data set can be used for other data types as well.
    - If so, propose a plan of action.

- If not, look for other proposals and/or opportunities; summary of the options in a preliminary report

- Objective: Available algorithms and methods of analysis
  - Contribute to book chapter for "Big Data Analytics in Bioinformatics and Healthcare":
    - Official due date = 31 Jan 2014
    - Interested parties provide feedback to Kristel by mid Jan 2014 (preferably earlier); task force on "taxonomy"?
    - First COST WG2 paper (coordinator of WG2 asks for official approval)
  - Identification of subtopics: homework; to be discussed during 2nd WG2 meeting

- Objective: Optimization and standardization of omics analysis → year 3

3.Identify / prioritize opportunities of research and for funding

- National level:
  - Homework for WG2 members; List completed during 2nd WG2 meeting in 2014
  - E.g.: Belgium: FNRS PDR (runs from 1 July 2013 – 30 June 2017)
- International level:
  - Homework for WG2 members

4.Opportunities for collaboration, links with other consortia or SMEs

- Kristel checks with
  - ELIXIR (expected to become an independent entity from X-mas onwards),
  - FP7 initiatives [? MIMOmics (Methods for Integrated analysis of multiple Omics datasets) develops statistical methods for the integrated analysis of metabolomics, proteomics, glycomics and genomic datasets in large studies]
  - BC Platforms is a Finnish research-intensive SME. [have delivered collaborative genetic research database systems for many EU Framework Programme (FP) funded projects and currently are an SME partner in five FP7 EU HEALTH projects: http://www.bcplatforms.com/Solutions/EU-FP-Projects.html]
- Others check with? Status to be discussed during 2nd WG2 meeting

5.STSM

- Propose at least one STSM from WG2 in 2014 (when approved by the MC/EU)
  - WG2 members look into their team for candidates (more advanced researchers) and proposals that are in line with the objectives of WG2
  - Proposals are sent to the WG2 leader and co-leaders + the STSM coordinator (Carlo La Vecchia) ; discussed in telecon prior DL

6.Reporting

- Is needed after year 2; yet proposal to safely keep all documents related to WG2 activities: Practical organization? Shared? Via DropBox? Other options?

8.Dissemination: Book chapter

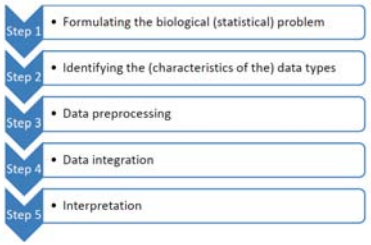
2.Workplan 1 April 2015 – 31 March 2015

- Build up WG2
  - Develop a strategy to share documents / ideas and enhance communication

- Standardization of omics deposit:
  - Coordinate with WG1 to see how much omics data are available within the consortium and work out a strategy for standardized omics deposit
  - Consider ease of use of repository for future analyses (connect with ELIXIR efforts)
  - Write a guidelines / recommendations document regarding omics deposit

- Objective: Available algorithms and methods of analysis
  - Identification of integrative analysis steps / topics; prioritization for COST

Steps



Topics (also: "translated objectives")
- Integromics to identify biomarkers (association)
- Integromics for prevention (risk prediction; inclusion of epidemiology) [WG4]
- Integromics to enhance biomarker robustness [WG3]
- Integrative approaches to detect patient heterogeneity
- Identification of pathways using integromics [WG3,4]

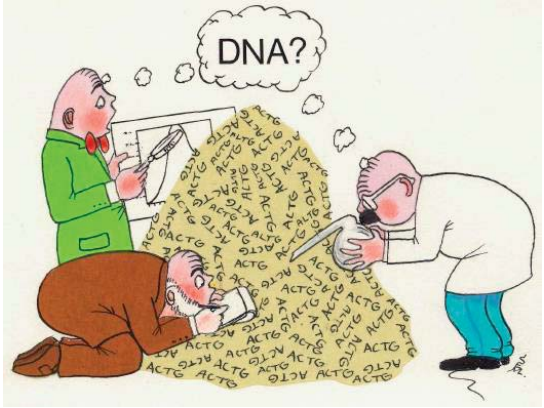
  - Creation of compendium of approaches/methods/algorithms for each of the prioritized steps/topics (to be continued in year 3)

- Objective: Optimization and standardization of omics analysis → year 3.
  - Requires research **funding** to perform comparative studies on methodologies; and or to develop (novel) more optimal (technical: e.g., power / practical: e.g., pancreas specific) integrative omics analyses
  - Will lead to Common guidelines to apply technologies and to integrate omics data in PDAC research (deliverable 7.)

3.-6.: to be discussed during 2nd WG2 meeting

8.Dissemination

- Plan to be worked out during the 2nd meeting of WG2 in 2014
  - Review and opinion paper related to "available algorithm and methods of analysis" objective
  - Start on paper describing pancreas omics data deposit (in collaboration with Claude Chelala). Anticipate that a year 3 paper may focus on how to use this repository for omics integrated analyses.
  - Accepted publications are posted on the web – when in line with the journal policies
  - Summary of all papers and guidelines on CD in year 3.
  - Dissemination plan not related to publications?


DNA?
ACTG

SUPPORTING DOCUMENT 2

WG2 MEETING 1

COST Action BM1204

29th November 2013 – CNIO, Madrid

WG2 leader: **Kristel Van Steen** (Liège, Belgium).

Co-leaders: **Joerg Hoheisel** (Heidelberg, Germany) and **Nuria Lopez-Bigas** (Barcelona, Spain)

OUTLINE

1 Presentation of WG2

- General objectives
- Deliverables
- Current members
- Required versus represented disciplines

2 WG2 activities (year 1)

- **Realization of objectives and deliverables (work plan)**
  - What has been done?
  - What needs to be done?
  - What can be done?
- **Funding**
  - Spin-offs of new national program proposals / projects
  - Spin-offs of new international program proposals / projects
- **Reaching out: defining strategies**
  - Knowledge OUT: STSM and training schools
  - Knowledge IN: Other COST programs

2 WG2 activities (continued – year 1)

- **Modi operandi**
  - Meetings
  - Storage /collection of WG2 documents
  - …

3 Thinking ahead (year 2)

- **Workplan construction**

1 Presentation of WG2

Leader: Kristel Van Steen, PhD[2]

- Biostatistics – Biomedicine – Bioinformatics
- Affiliations:
  - Systems and Modeling Unit, Montefiore Institute, University of Liège, Belgium
  - Bioinformatics and Modeling, GIGA-R, Liège, Belgium

SYSTMOD @ Montefiore

- Systems and Control
  - Collective Motions, Dynamics and Control of Juggling, Optimization on manifolds, Rhythms and oscillators, Nonlinear control (more info)
- **Stochastic Methods**
  - **Machine Learning: decision trees, bayesian networks, reinforcement learning, variance reduction**
  - Computer Vision: image classification, retrieval
  - Monte-Carlo methods: simulation, optimization, variance reduction
- **Bioinformatics and System Biology**
  - **Analysis of biological data: proteomic, genomic, data mining, biomarker identification, gene selection**
  - Modeling of biological systems: Cardiac Rhythm Fluctuations, Sleep apnea syndrome
  - Modeling and simulation of the thalamocortical circuitry
- Power Systems
  - Stability: voltage stability, transient stability, small-signal stability
  - Security: probabilistic security assessment, preventive security, emergency control
  - Energy markets: modeling, simulation

SB&CB @ GIGA-R (+/- 100 individuals)

[2014 + ; Head]

- Laboratory of molecular engineering and genetic engineering
- Laboratory of histology and mammalian cell culture
- Laboratory of mass spectrometry
- **Research unit of systems and modelling**
  - **Algorithms and stochastic methods**
  - Computational systems biology
  - **Bioinformatics – Statistical Genetics**
  - Systems and control

1 Presentation of WG2

Co-leaders: Joerg Hoheisel and Nuria Lopez-Bigas

Part of a whole

- WG1 Research tool harmonization
- WG2 Integration of omics data
- WG3 Translational research
- WG4 PDAC patient management

WG2-specific objectives

1. **Optimization and standardization of methods for omics analysis** of pancreas tumoral and normal tissue samples
2. Establishment of **standardized approaches for omics data deposit**
3. **Identifying and documenting** available **algorithms for omics data integration**

   Issues to be considered include: the data high dimensionality - small sample size problem, the inherently noisy nature of the data, the stability and reproducibility of the models, the incorporation of domain knowledge.

How to best achieve progress on ALL objectives?

Human resources: Interdisciplinarity to achieve the goals

Inviteds

Biostatistics, bioinformatics, machine learning, functional genomics, biomedicine, informatics, oncology, pathology, transcriptomics, epigenomics, computational cancer, molecular oncology, data management, genomics, guidelines development, statistics, epidemiology, statistical genetics, computational biology, visualization, digestive oncology, computer science, integrative biology

Missing in practice, yet identified to be crucial

oncologists, surgeons, WG1 leaders, WG3 leaders, (WG4 leaders)

Study of the reasons for high non-response rates (main cause for delayed kick-off meeting :

- WG2 is particularly research oriented
- Cost by default does not finance research

Inviteds	Country
Kristel Van Steen	BE
Eric Van Cutsum	BE
Darlene Goldstein	CH
Joerg Hoheisel	DE
Ralf Herwig	DE
Irene Esposito	DE
Nura Malats	ES
Nuria Lopez-Bigas	ES
Ivo Gut	ES
David Pisano	ES
E Eduardo Gonzalez Couto	ES
Alfonso Valencia	ES
Isabel Cuesta	ES
Stephan Ossowski	ES
Dr. Anwar Rayan	IL
Claudio Bassi	IT
Aldo Scarpa	IT
Andrew Biankin	UK
Ewan Birney	UK
Alvis Brazma	UK

How to best build WG2 as an interdisciplinary mix of key players and young investigators?

Strategy to attract new members (included in work plan for year 1)**:**

- Transparency regarding what COST means and what it can offer
  - It is essential to update the Action's website and to provide information about COST in general

    (e.g., http://www.multitude-project.eu/what-is-multitude.html)
  - Member list needs to be updated online:
    - Facilitates establishing collaborations
    - Facilitates identifying opportunities for STSMs (Question to Office: STSMs should always involve two countries?)

Strategy to attract new members (included in workplan for year 1):

- Non-responders will be re-contacted by COST members (in particular, WG2 members) who know the targeted individuals (the personal touch approach)
- Create LinkedIn interest group on "integrated omics in pancreatic cancer"
  - Helps in identifying new members
  - Interest of patients / patient groups is triggered
- Identify / explore other opportunities:
  - WG2-page
  - Twitter
- Clinical Research Organizations / Pharma (GSK? J&J? R&D/data handling)
- EORTC (omics in clinical trials/cancer)

Strategy to attract new members (included in workplan for year 1):

- Getting funding
- Getting data:
  - Data cataloguing (within COST by WG1? How? Excell table to be distributed within the consortium to list the available omics data? Needs to be appended with publicly available data)
  - Data repository (Who? Existing infrastructure (EGA; Pancreatic Expression Data Base)? Part of WG1 program / coordinate with WG1?)
  - Policies (data storage versus data mining/accessing; highly depends on whether a new infrastructure is created or one tags on existing infrastructures)

WG2 Specific deliverables

1. WG2 Meetings (~~April 2013~~ and November 2013)
2. Work plan for 2014 (+)
3. Identify / prioritize opportunities of research and for funding
4. Establish contact with other consortia (i.e., ICGC, ---) and SMEs and explore opportunities for collaboration
5. Short-Term Scientific Missions (STSM)
6. Biannual internal progress report and annual report
7. Common guidelines to apply technologies and to integrate omics data in PDAC research
8. (e)Publication / CD / WEB

[___ : active/relevant for year 1 "reporting"]

Deliverable 1: WG2 Meetings (~~April 2013~~ and November 2013)

- Second WG2 meeting (still in year 1)
  - Date: February
  - Location: Germany (Heidelberg)
  - Motivation location:
    - Possibility to attract local people (EMBL)
    - DKF
- Combine this meeting with a short course (training):
  - Topic:
    - How to access pancreatic cancer data? (Chelala; COSMIC)
    - Prioritization of omics data (for prediction / for risk assessment / for biomarker discovery) (Nuria Lopez-Bigas, Yves Moreau)

Deliverable 1: WG2 Meetings (~~April 2013~~ and November 2013)

- The research component of the WG's objectives requires identification of pancreas-specific issues related to omics (integrated) analysis
  - To identify topics for which "optimized" analysis methods can be proposed
  - To identify opportunities for pancreas-targeted papers when reviewing / listing of available methods (rather than having to stay too general / non-pancreas specific)
- Identifying these topics is part of the work plan for year 1.
- WG1, WG3 leaders are invited to WG2 meeting(s): data – analysis - results
- Question to Office: Budget to invite external expert in bioinformatics + pancreas omics analysis?

2 WG2 Activities

Deliverable 2: **Work plan 1 April 2014 – 31 March 2014**

- Build up WG2 and its organization (see before)
  - Strategy to attract new WG2 members: mix of key players and young investigators
  - WG2 in particular is highly research oriented and hence finding additional funding to support research (and to attract new members via the obtained research funding) is crucial [see later]

- Objective: Standardization of omics deposit
  - Investigate whether and how web-based Platform for Mining Pancreatic Expression Data set can be used for other data types as well (Claude Chelala).
  - In particular, answers to the following questions should be obtained during year 1:
    - Who curates the expression data? Can he/she do the curating/uploading of the data for new omics types?
    - What makes this platform "special" / "attractive"?
  - List other proposals and/or opportunities for omics deposit during the course of year 1. Propose a plan of action to be included in the work plan for year 2 for this objective

- Objective: Standardization of omics deposit (continued)
  - Need to include WG1 in the discussions:
    - Biological / clinical data deposit + standardization (WG1)
    - Omics data deposit (WG2)
    - Combination !!!
  - Question to Office:
    - Are there plans to establish a data Coordination Center to access the data for analysis? DACs?
    - Is data centralization feasible? WG2 expresses concerns regarding centralized omics data deposit …

- Objective: Available algorithms and methods of analysis
  - Contribute to book chapter for "Big Data Analytics in Bioinformatics and Healthcare":
    - Body of contribution:
      "Present your perspective on the issues, controversies, problems, etc., as they relate to theme and arguments supporting your position"
      "Discuss solutions and recommendations in dealing with the issues, controversies, or problems presented"
    - Title: "Perspectives on Data Integration in Human Complex Disease Analysis"
    - Fits into "start globally", then "do in-depth review"
    - Official due date = 31 Jan 2014
    - Approval editor for it to be a "COST" contribution will be sought

- Objective: Available algorithms and methods of analysis (continued)
    - Interested parties provide feedback to Kristel by mid Jan 2014 (preferably earlier);
  - Create task force on "taxonomy" (?)
  - Identification of subtopics
    - Provide list (~ translated COST objectives) to be discussed + prioritized during 2nd WG2 meeting
      - Integromics to identify biomarkers (association)
      - Integromics for prevention (risk prediction; inclusion of epidemiology) [WG4]
      - Integromics to enhance biomarker robustness [WG3]
      - Integrative approaches to detect patient heterogeneity
      - Identification of pathways using integromics [WG3,4]
    - Action plan for prioritizations to be included in year 2 work plan [Note: instrumental role of invited expert to WG2]

- Objective: Optimization and standardization of omics analysis → year 3
  - Important not to reinvent the wheel: MINSEQE (WG1) – WG2 – Equator Network (WG3)

Bioinformatics for Omics Data : Methods and Protocols

Editor(s): Bernd Mayer[1]

Affiliation(s): (1),emergentec biodevelopment GmbH, Gersthofer Strasse 29-31 Vienna 1180 Vienna Austria

Series: Methods in Molecular Biology | **Volume No.:** 719

Print ISBN: 978-1-61779-026-3

  - Start documenting exiting material in year 1, continue in year 2 and 3. Develop a concrete plan of action in the work plan for year 2
  - Recommendations should include integration in excellent data accessing tools (cfr. Spotfire; others are listed as part of WG2 work plan for year 2)

Deliverable 3: **Identify / prioritize opportunities of research and for funding**

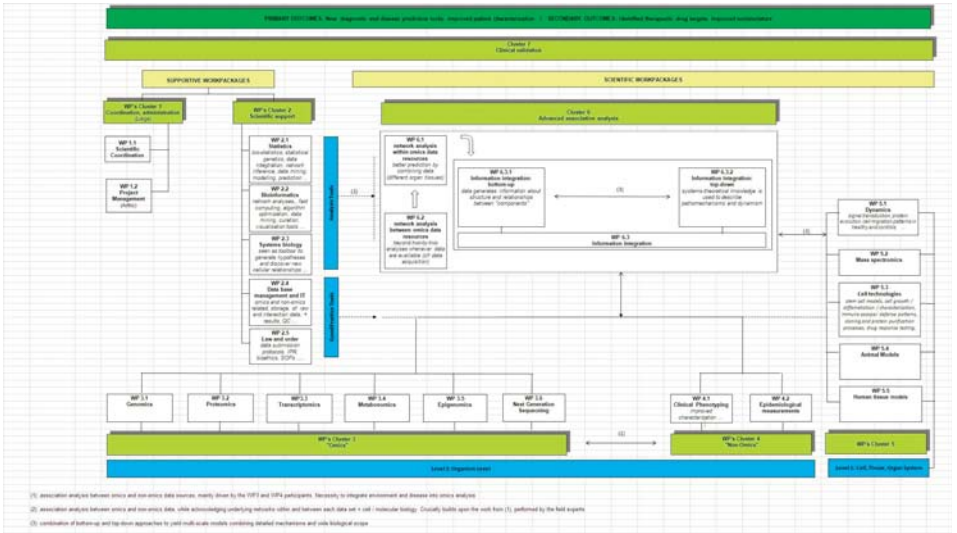
- National level:
  - May be problematic for some member countries, given the current economic situation
  - Nevertheless, plan to include (some) WG2 objectives into new project proposals
  - E.g.: Belgium: FNRS PDR (runs from 1 July 2013 – 30 June 2017)

Funding (continued)

- International level:
  - "Go Europe", despite the high competition (already having acquired COST funding is an asset)
    - Synergy grant
    - Horizon 2020
    - IMI

    Identifying interesting calls and taking actions accordingly is included as part of the work plans for year 1, 2 and 3
  - Route 1: WG2 objectives specific
    - Seek/list opportunities to be part of grant proposals made by PI's outside the Action (not necessarily pancreas-specific)

- International level (continued)
  - Route 2: Global involvement of the Action (all; multiple WGs within the Action)
    - Submit as coordinator --> plea to have route 2 coordinated by the coordinating office
    - One can build on existing templates (cfr, earlier FP7 application efforts)



Deliverable 4: **Opportunities for collaboration, links with other consortia or SMEs**

- Identify + inquire about opportunities (made part of year 1 and year 2 work plan):
  - ELIXIR
  - COST Actions
  - FP7 initiatives [? MIMOmics (Methods for Integrated analysis of multiple Omics datasets) develops statistical methods for the integrated analysis of metabolomics, proteomics, glycomics and genomic datasets in large studies]
  - BC Platforms (a Finnish research-intensive SME) [? have delivered collaborative genetic research database systems for many EU Framework Programme (FP) funded projects and currently are an SME partner in five FP7 EU HEALTH projects: http://www.bcplatforms.com/Solutions/EU-FP-Projects.html]

Deliverable 5: **Short Term Scientific Missions**

- Propose at least one STSM from WG2 in 2014 (when approved by the MC/EU)
  - WG2 members look into their team for candidates (more advanced researchers) and proposals that are in line with the objectives of WG2
  - Options are discussed during the December telecom.
  - Proposals are sent to the WG2 leader and co-leaders + the STSM coordinator (Carlo La Vecchia)

Deliverable 8: **Dissemination** plan

- Book chapter
- In year 2 work plan:
  - Special issues related to objectives of WG2:
    - Via École polytechnique fédérale de Lausanne
    - Via editor of genetic epidemiolgy
  - Focal points to be identified

Modi operandi

- Telecons using Go2meeting software: 1 in Dec (after mid December; the official release of Horizon 2020 calls), 1 in Jan, Febr = WG2 in vivo meeting; after year 1: every 2-3 months a telecon with all available WG2 members
- Co-leaders may have intermittent meetings to discuss WG2 related issues
- For all correspondence with WG2 leader: co-leaders are put in cc
- Google docs facilities are used for document sharing and to build a repository of information for future reporting. Facilities may need to be revised as WG2 groups or activities take on different natures
- Organization of national working groups (yound and senior members)