Life Sciences Cluster

Dr. Magdalena Radwanska
Science Officer for
Strategic Activities
COST Day in South Africa
Pretoria, 8 September 2009

9 COST Domains and 3 Clusters

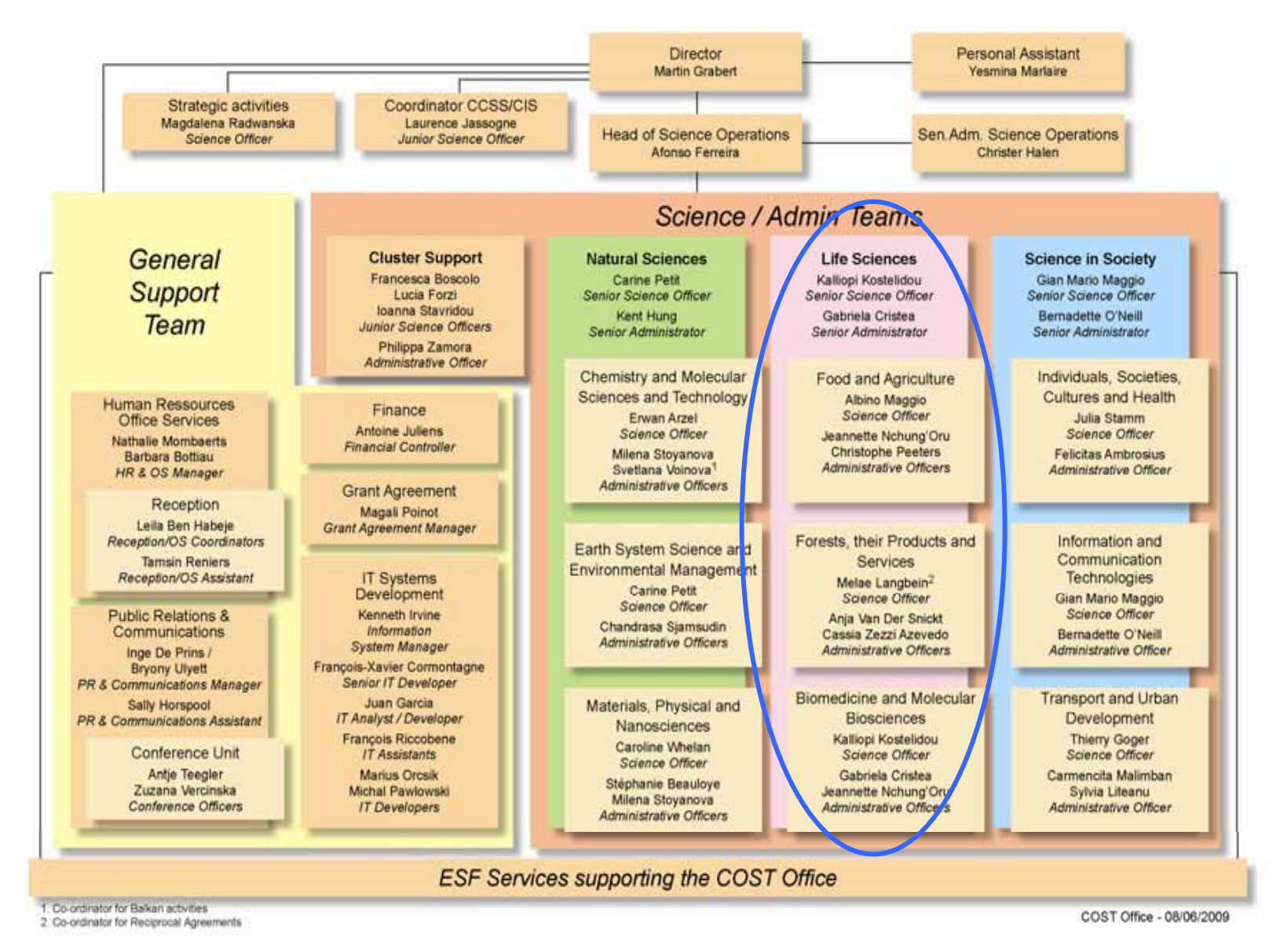
- **Biomedecine & Molecular Biosciences**
- **Food & Agriculture**
- **Forests, their Products & Services**

Life Sciences

- Materials, Physical & Nanosciences
- Chemistry, Molecular Sciences & Technologies
- Earth System Sciences & Environmental Managament

- Information & Communication Technologies
- Transport & Urban Development
- Individuals, Society, Culture & Health

The COST Office



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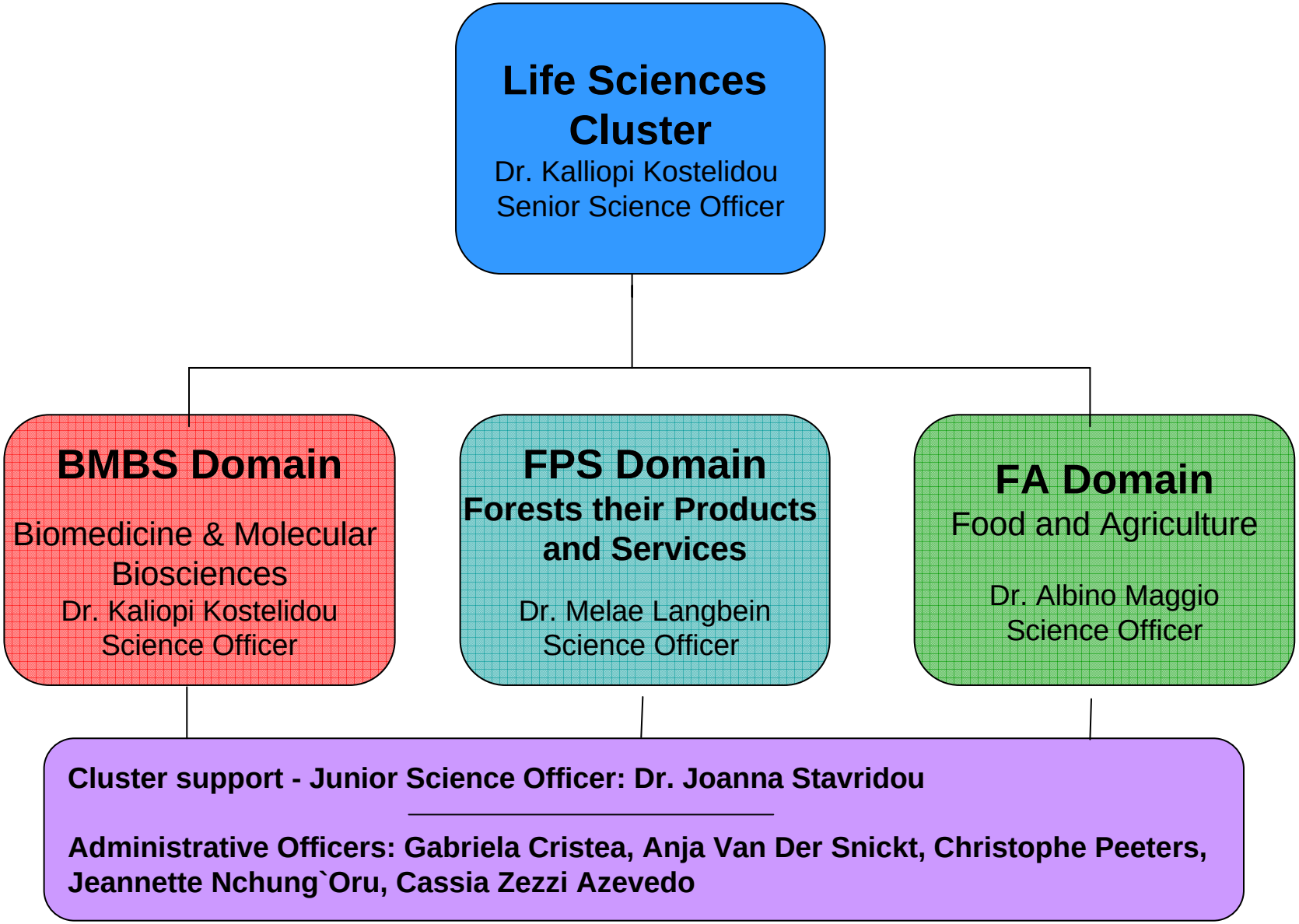

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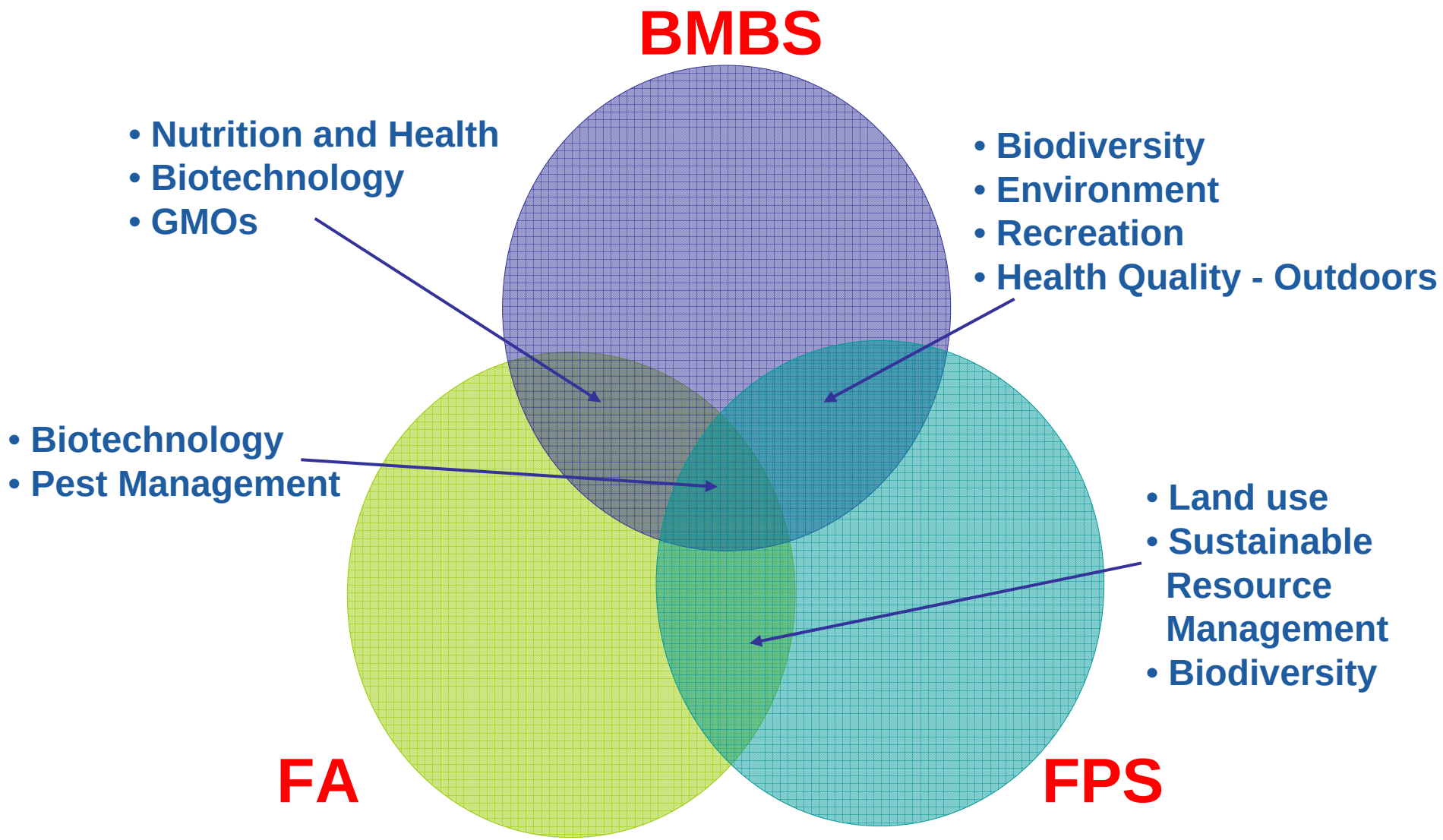
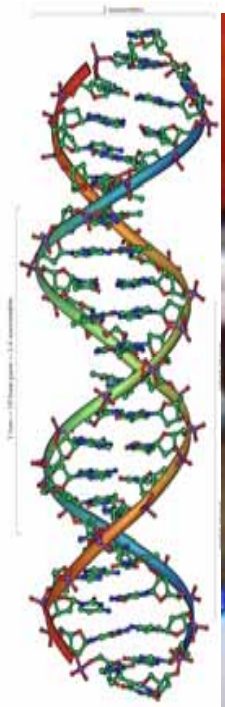
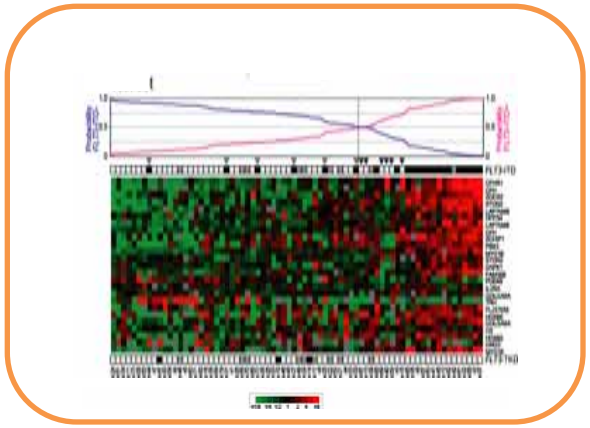
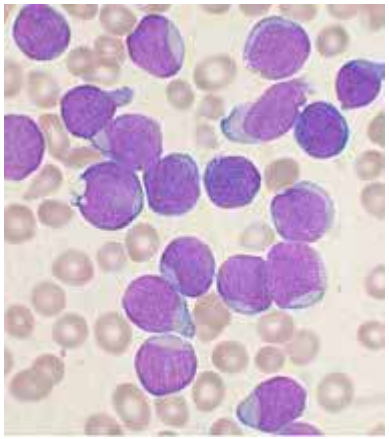


COST- Biomedicine and Molecular Biosciences

BMBS Domain







Domain Committee Chair:
Prof. Hans Stødkilde-Jørgensen (DK)

BMBS – Domain Description

- **Scope:** BMBS covers all areas of applicable and basic medical research involving preclinical and clinical studies implementing the bench to beside concept.
  - Including: genomics, proteomics, transcriptomics, metabolomics, systems biology aiming at understanding of human body functions and alterations of them in case of disease.

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    - Acceleration of translational research (bench to bedside)
    - Endorsement of interdisciplinary research

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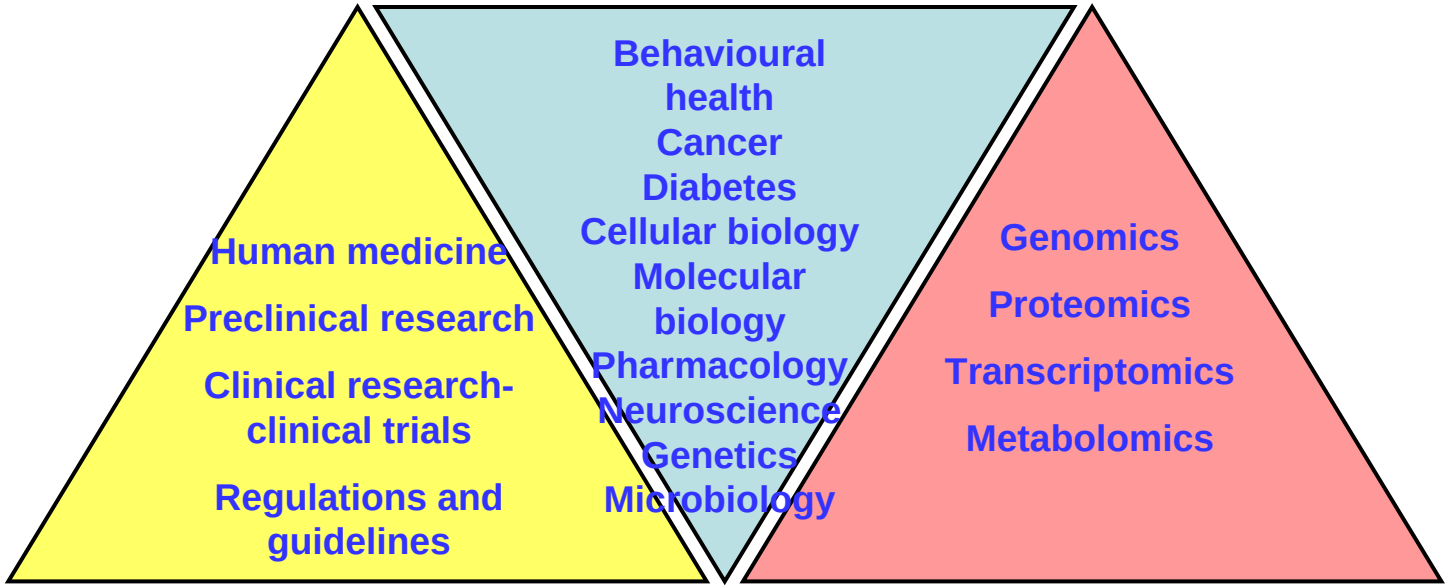
    - Endorsement of interdisciplinary research
  - BMBS domain welcomes interdisciplinarity and use of bioinformatics, biomedical engineering and development of mathematical algorithms underlying biological processes.
  - Novel drug targets for a variety of diseases

BMBS Domain – Actions Portfolio

Biomedical Biosciences

7 Actions



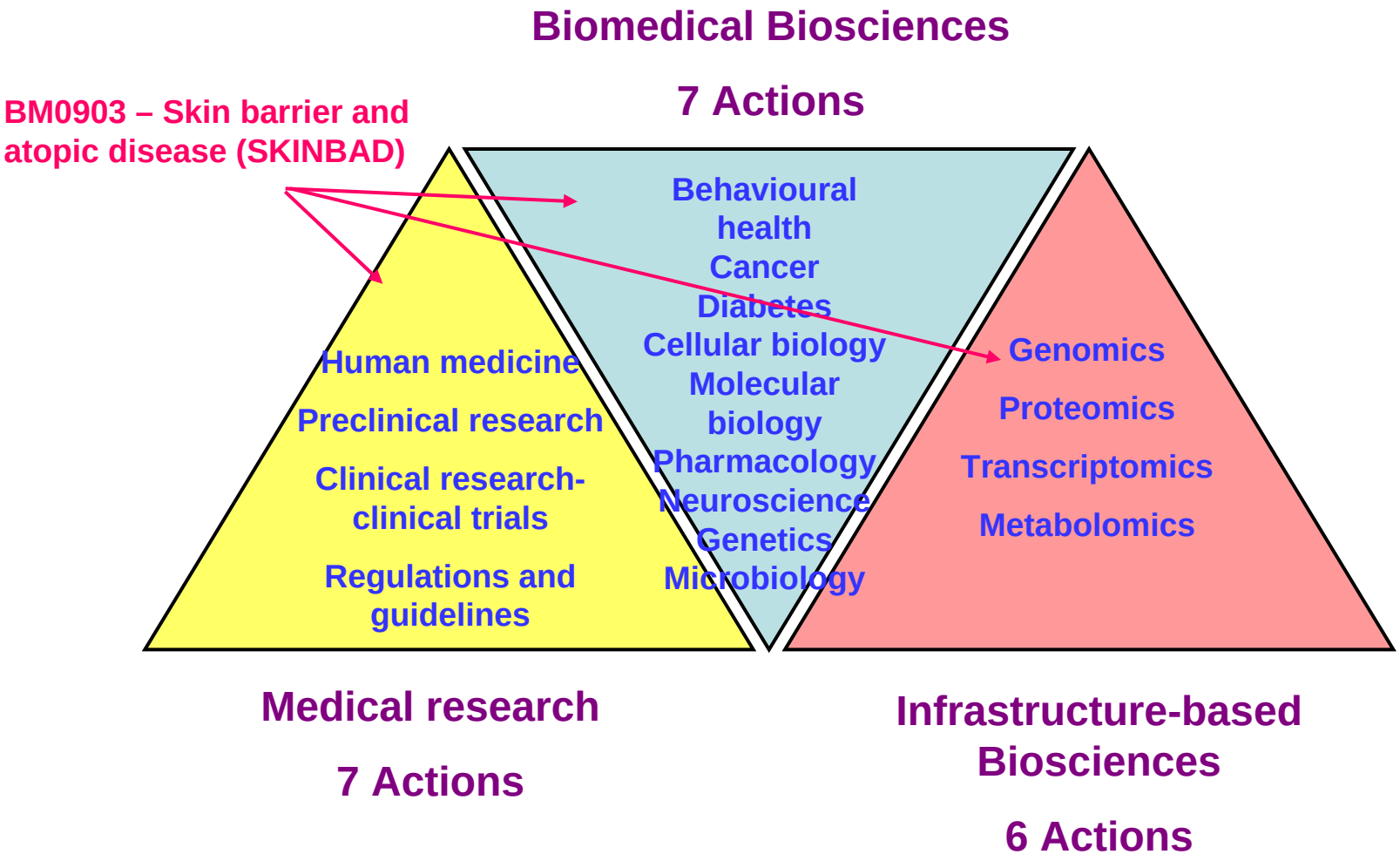
Medical research

7 Actions

Infrastructure-based Biosciences

6 Actions

BMBS Domain – Actions Portfolio



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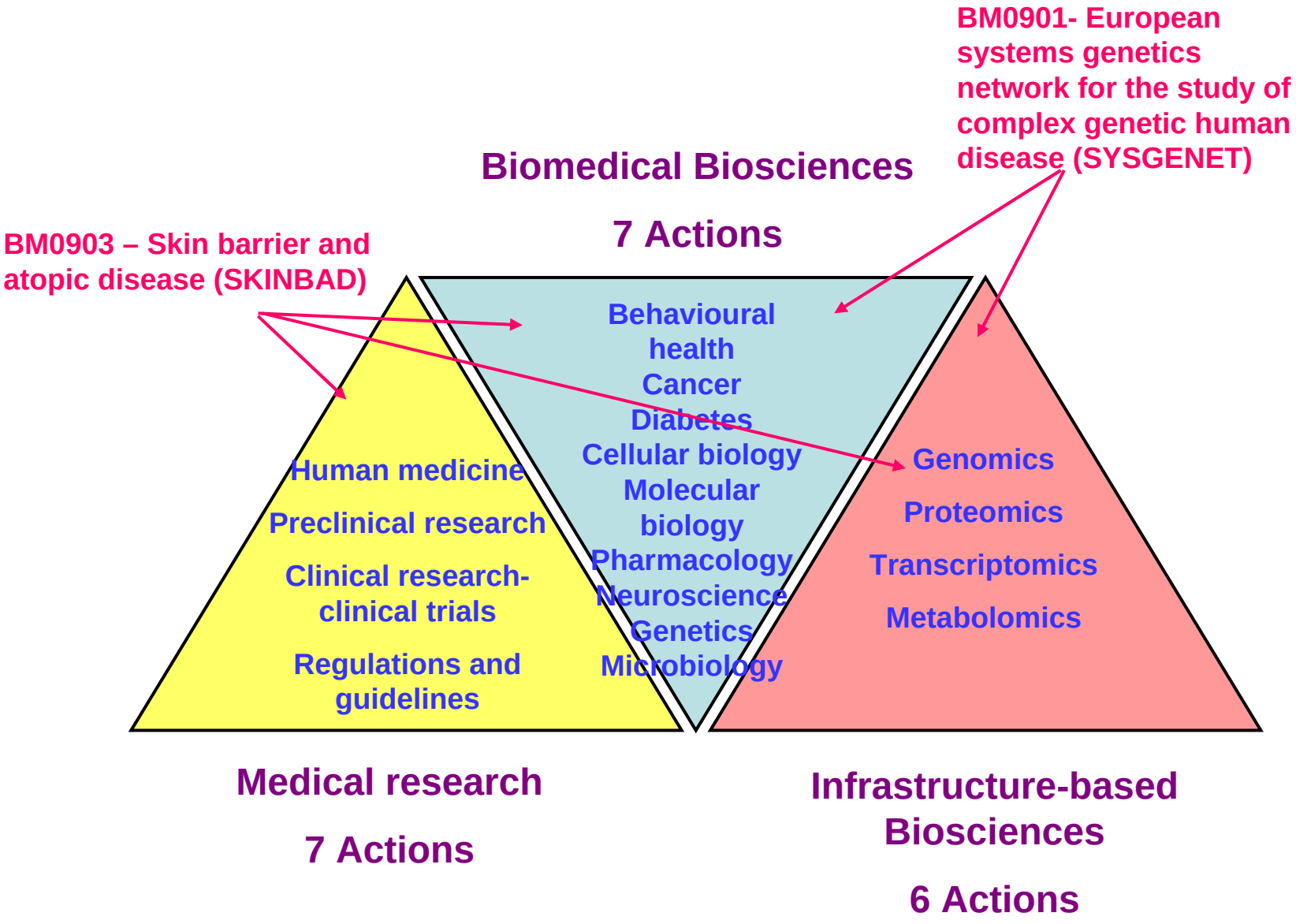

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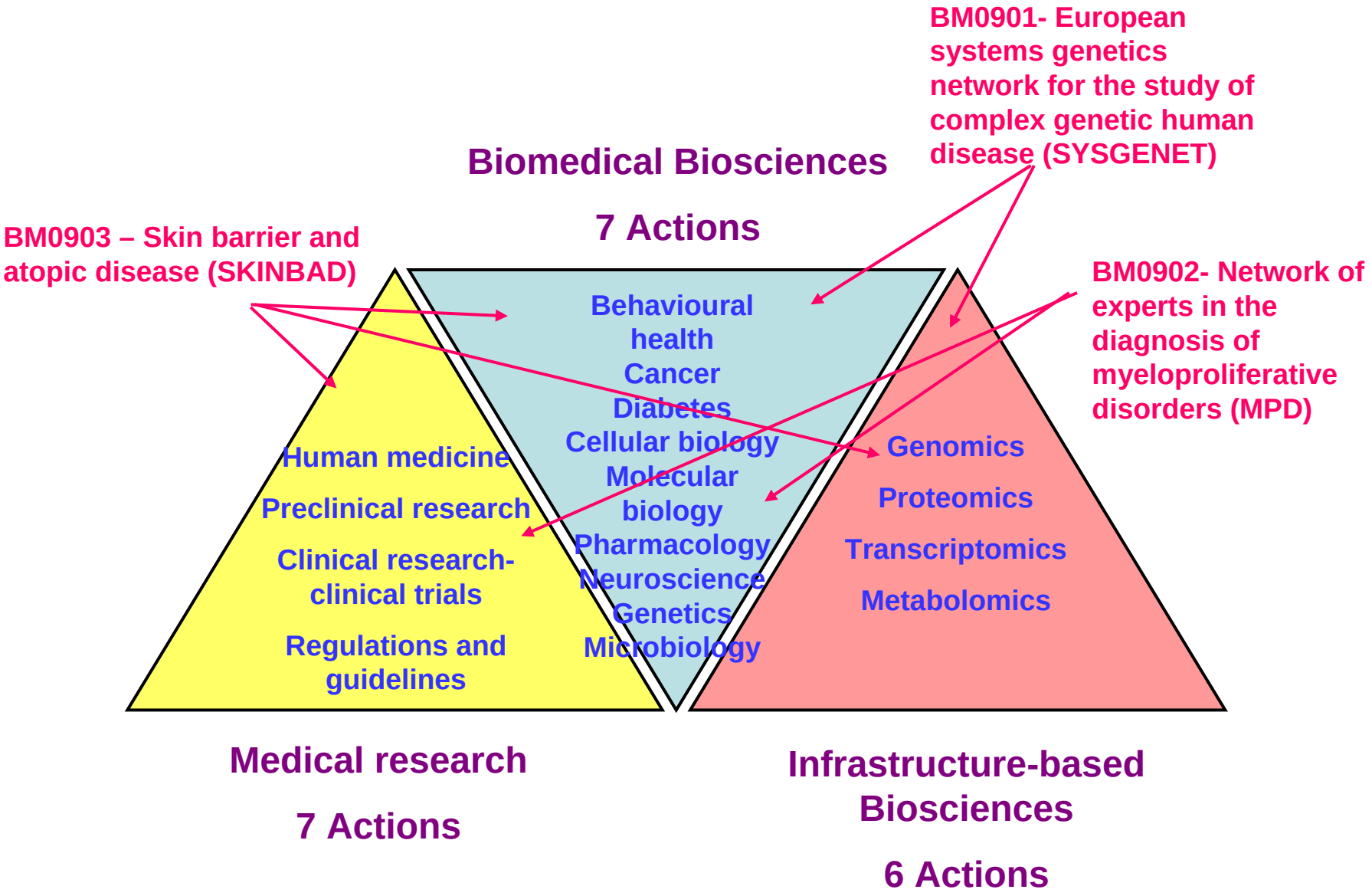


Examples of Actions in Biomedicine and Molecular Biosciences

Infectious diseases – bacterial drug resistance

Chemotherapeutics for parasitic diseases

Transplantation

Combating cancer

COST ACTION - BM0701

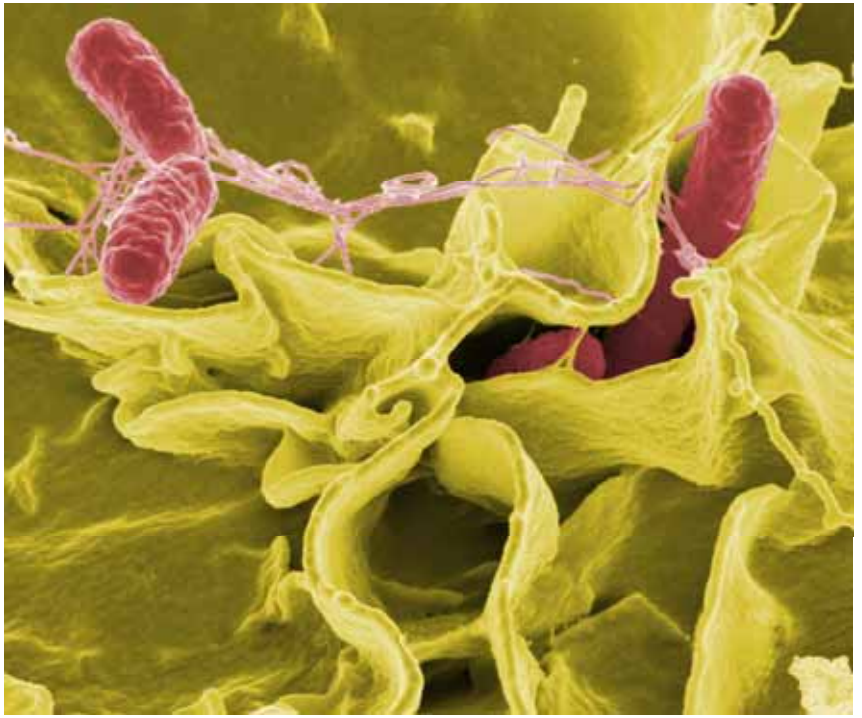
New Strategies to Combat Bacterial Resistance: Antibiotic Transport and Efflux

- The main objective
  - Create a framework between experts in the many fields of science necessary for understanding bacterial multi-drug resistance (MDR) at the molecular and genetic levels.
  - Translate this knowledge into the development of diagnostic tests and antimicrobials that will effectively control infectious diseases.

COST ACTION - BM0701

New Strategies to Combat Bacterial Resistance: Antibiotic Transport and Efflux

- MDR is the active expulsion of drugs by bacterial pumps that expel unrelated compounds.
- A coordinated effort is urgently needed for the control of drug efflux mechanisms that mediate resistance against all antibiotic families in bacterial pathogens.



COST ACTION address global public health threats such as bacterial drug resistance

Infectious diseases are spreading faster and appear to be emerging more quickly than ever before.

An associated risk concerns the continuing and increasing evolution of **drug resistance** which is a major factor in the emergence and re-emergence of infectious diseases.

COST ACTION – B28

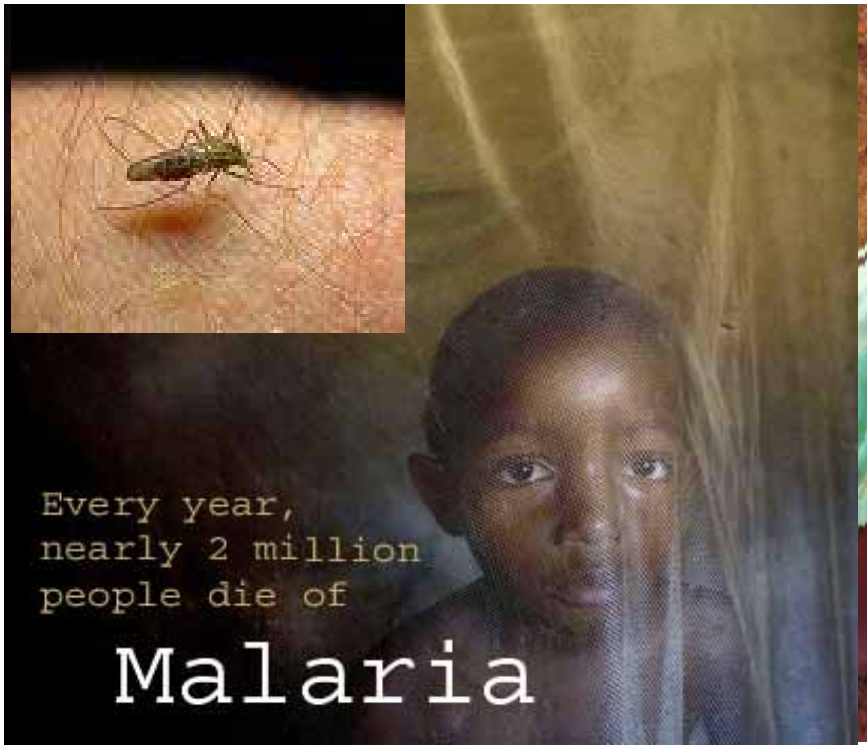
Array technologies for BSL3 and BSL4 pathogens

- The main objective
  - Increase the knowledge about highly pathogenic bacteria and viruses through network of different experts.
  - Support collaborative effort in better understanding of epidemiology and development of more acute diagnosis, vaccines and therapeutics

COST ACTION - BM0802
Life or death of protozoan parasites

- The main objective
  - Build an extensive, multi-disciplinary translational network to advance knowledge and understanding of when, why and how protozoan parasites undergo programmed cell death (PCD).
  - Translate this knowledge into the development of diagnostic tests and antimicrobials that will effectively control parasitic diseases.

COST ACTION address the need for development of chemotherapeutics against parasitic diseases such as malaria and sleeping sickness



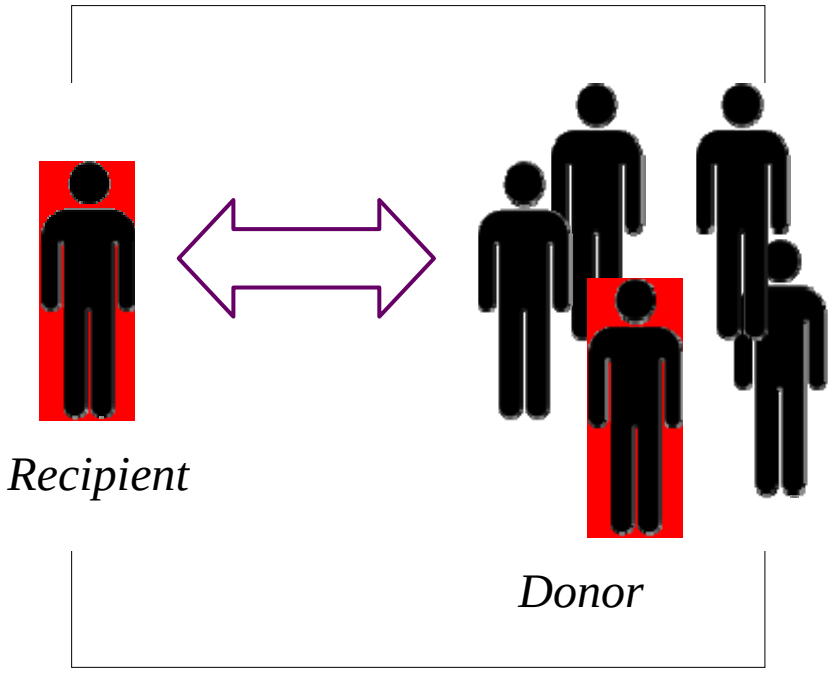
COST ACTION - BM0803

European network of the HLA diversity for histocompatibility, clinical transplantation, epidemiology and population genetics

- The main objective
  - Catalyze networking and knowledge exchange in clinical medicine, epidemiology and populations genetics - through the qualitative and quantitative improvement of the Human Leukocyte Antigen (HLA) genetic dataset available for transplantation.
  - Develop a network of research teams working on HLA molecular diversity in human populations through standardization of protocols and procedures, creating bio-informatic platforms.

COST ACTION studies human diversity related to clinical transplantation, epidemiology and population genetics.

Transplantation



Human population

COST ACTION - BM0606

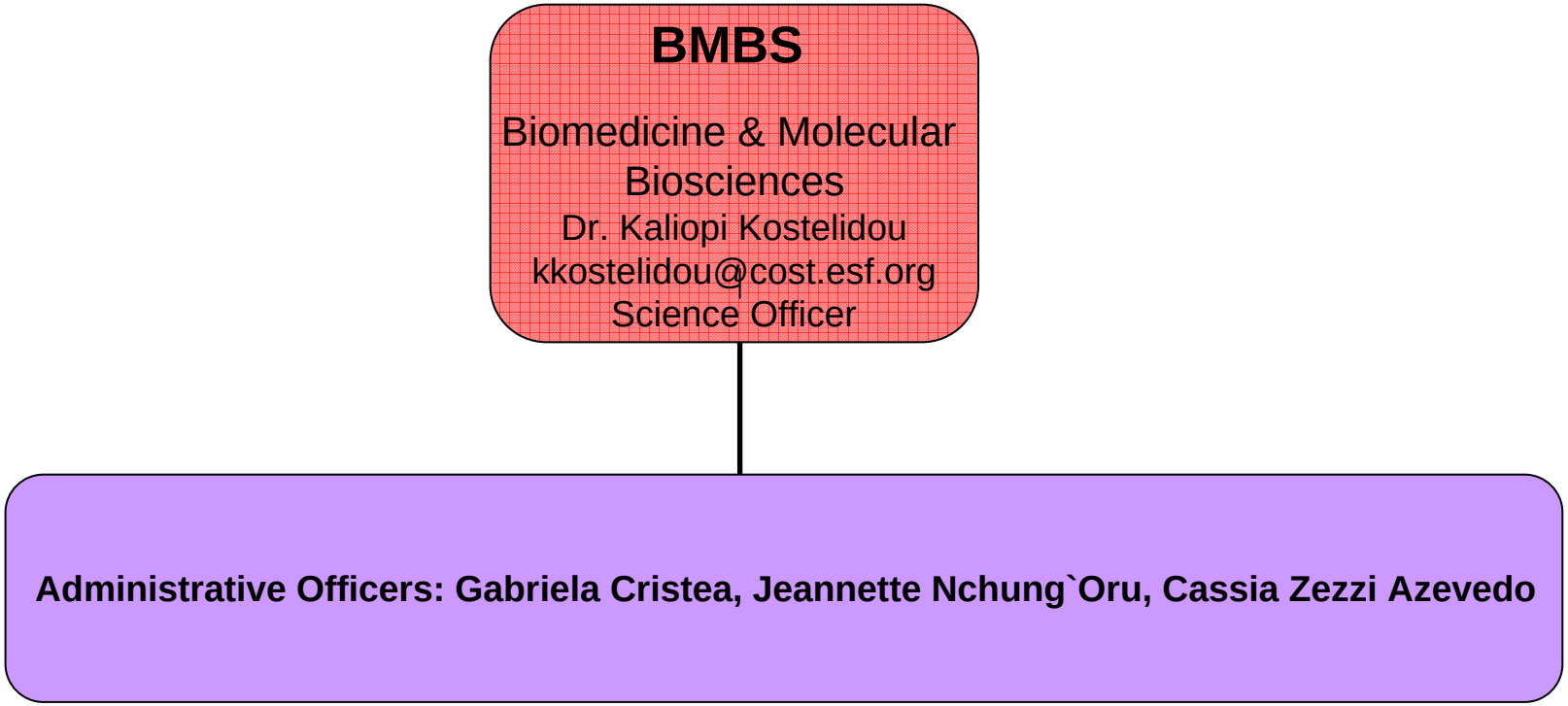
Collaborative Association Studies in Breast Cancer

- The main objective
  - Develop a network of research teams that will provide a combined analyses and reliable assessment of the genetic risks in combination with lifestyle risk factors associated with breast cancer.
  - Provide the basis for individual prediction of risk, improve genetic counseling, prevention and new targets for cancer therapy.
  - Development of infrastructure and expertise in high-throughput genotyping.

COST ACTION addresses the risk factors related to cancer

- Breast cancer has a strong genetic component, but most genes underlying the disease are unknown. The impact of genetic and life style related factors are be evaluated in a very large epidemiological

BMBS Domain



Thank you for your attention !