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Project Presentation
ELSA Systems Medicine
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BIOGUM
Forschungsschwerpunkt
Biotechnik, Gesellschaft
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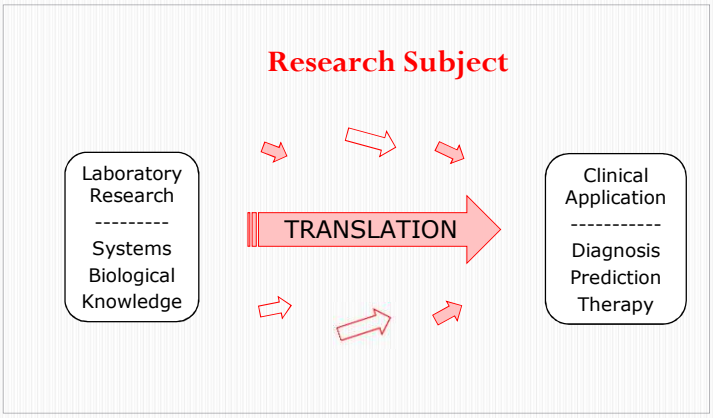
From Models and Humans. Integration, Standardization and Individualization in Systems Medicine

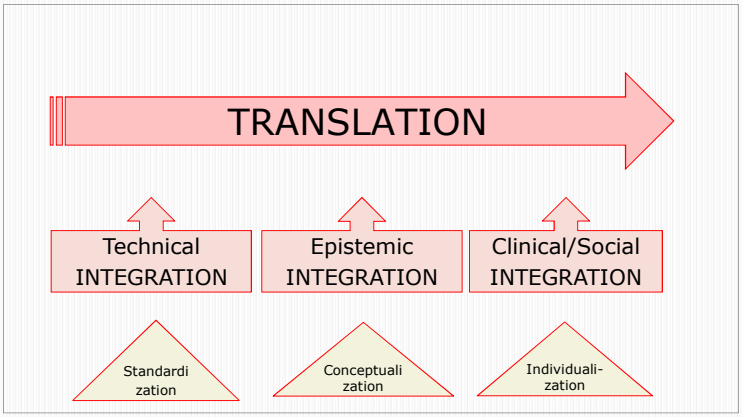
Introduction:

Systems Medicine aims at translating systems biological knowledge into diagnostic, predictive and therapeutic applications taking into account individual differences among patients. Whereas individualized medicine is more or less still oriented towards single biomarkers, systems medicine is grounded on mathematical models integrating data from different sources (genomics, proteomics, etc.).

Research Question:

How is knowledge from molecular and systems biology translated into medically relevant knowledge?





Hypotheses:

(1) **Translation** of knowledge from systems biology into medicine is a **complex process of integration** comprising technical, epistemic, clinical and social challenges.
(2) Because of the genuine **interdisciplinary claim** of systems medicine, different scientific research logics, theories, methods, practices and discourses interact in the integration process. They can create terminological, pragmatic and social **differences and problems which impede** the utilization of systems biological knowledge and its translation into clinical applications.
(3) **Successful translation** of systems oriented approaches into medicine is only possible by **better understanding** and **overcoming these integration problems and obstacles**.

Study Design:

Since the elements, processes and dynamics of integration and translation are so far barely examined empirically, we will conduct an **empirical study** based on **document analysis and interviews.** Two case studies (***breast cancer/acute lymphoblastic leukemia***) on integration processes that take place in establishing diagnostic, predictive or therapeutic programs will be explored.

Methods:

- **Literature review & document analysis on**
  - ✓ Systems medicine in Germany
  - ✓ Concepts of integration and translation in systems medicine
  - ✓ Processes of standardization and individualization in systems medicine

- **Interview study with**
  - ✓ 10-15 scientific experts of the disciplines involved/per case
- **Feedback workshop** with one of the research groups/per case
- **International Summerschool** with Ph.D. candidates and Post-Docs