GMDS & CEN-IBS 2020 – Workshop:

Workshop: Making Decisions in Biomedical Informatics

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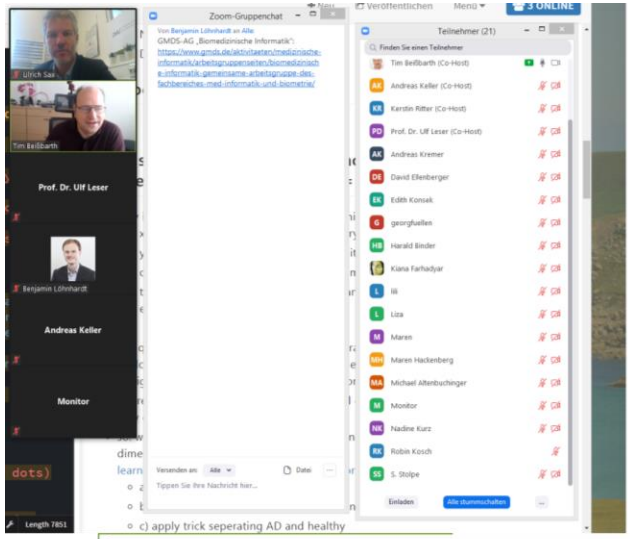
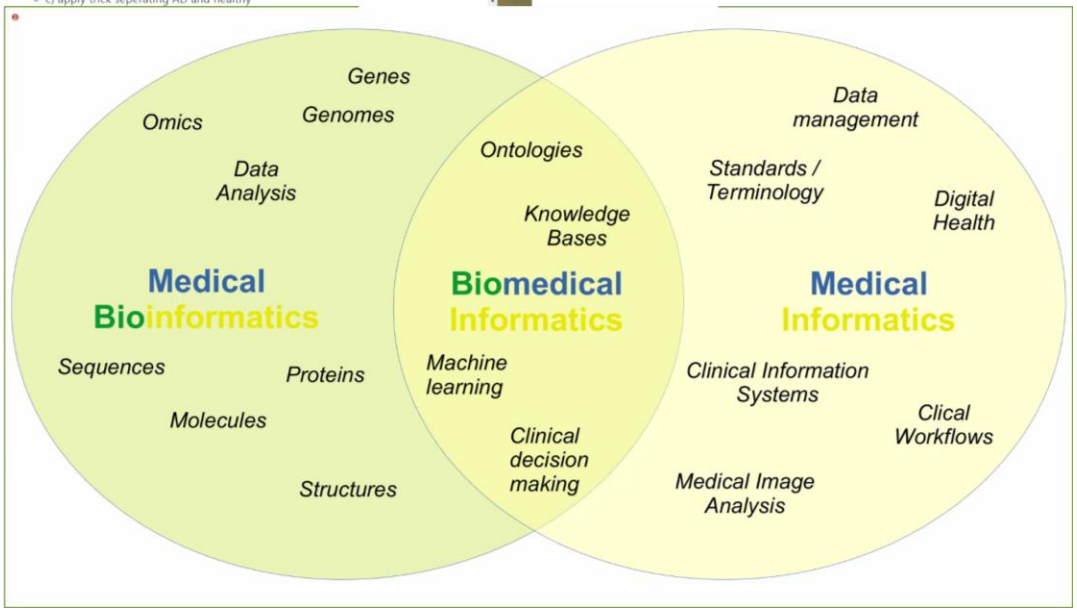
Agenda

GMDS & CEN-IBS 2020 – Workshop:
Workshop: Making Decisions in Biomedical Informatics

10:00 - 10:10	Introduction (Tim Beißbarth, Universitätsmedizin Göttingen)
10:10 - 10:35	Summary of the talk with followed discussions: "The molecular Haemogram-challenges for biomedical IT" (Andreas Keller, Universität des Saarlandes)
10:35 - 11:00	Summary of the talk with followed discussions: "Analyzing brain MRI data with machine (deep) learning - promises and pitfalls" (Kerstin Ritter, Charité Berlin)
11:00 - 11:25	Summary of the talk with followed discussions: "Knowledge management support for molecular tumor boards" (Ulf Leser, Humboldt-Universität Berlin)
11:25 - 11:35	Summary (Ulrich Sax, Universitätsmedizin Göttingen)
11:35 - 12:00	General discussion (Ulrich Sax, Tim Beißbarth)


Zoom-Gruppenchat
Teilnehmer (21)
Prof. Dr. Ulf Leser
Andreas Keller
Monitor


Genes
Omics
Genomes
Data Analysis
Medical Bioinformatics
Sequences
Proteins
Molecules
Structures
Ontologies
Knowledge Bases
Biomedical Informatics
Machine learning
Clinical decision making
Data management
Standards / Terminology
Digital Health
Medical Informatics
Clinical Information Systems
Clical Workflows
Medical Image Analysis

Summary

#31: how to bring this in the clinic? (Keller)

–single cell RNA sequincing of blood cells show high resolution, potential to alter current medical procedures
–BUT bears challenges for bioinformatics and medical informatics

QUESTION: which ones?
-longitudinal mapping
-make data more accessible
-more interpretable
-integrated data and method in hospital information systems (!)

Summary

*why translation in clinical routine so difficult? (Ritter)

- ML: needs a lot of data – hospitals protect (s. MII?)
  ML: standardizes data–heterageneous (s. GECCO Plus, MII)

- well defined problems – multi-leveled problems
- depends on gold standard – diagnostic guidlines are changing (!!)

- perceived as black box — need acceptance (transparency, responsibility)
- (3) Black box criticism
- Clinicians, Patients need “Trust” (compare to Amazon, cars?)

- possible Solution: Explainability: use heat maps for visualizing significance
- reduce dimensionality

Shared Decision Making in Tumor Boards

Various therapies:

surgery | radiotherapy | chemotherapy | immunotherapy | Targeted Therapy

Decision about therapy in interdisciplinary team.

targeted drugs to individual genetically modified molecular targets.

Molecular tumor board:

Lung cancer:
- ALK, ROS1 Translocation
- EGFR Mutations

Breast cancer:
- HER2 amplification

AML
- PML-RARA or MLL translocation

ALL, CML:
- ABL1-BCR Translocation
- ABL1 Mutations

Gastrointestinal tumors:
- KIT Mutations

Ovarian carcinoma:

Summary

*how do we filter for clinical relevance - does it help at all? (Leser)

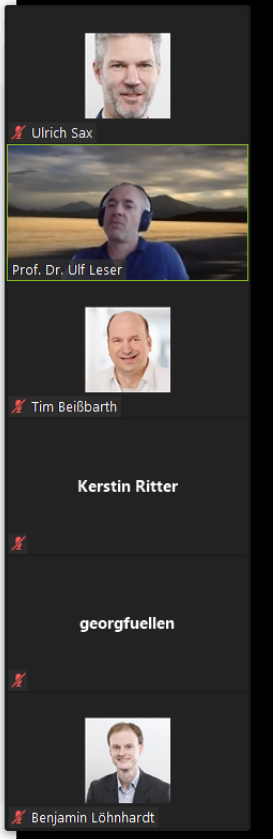
- pubmed ranks by recency
- everybody can build nice interfaces...but do they help?
- VIST with clinical relevance ranking
- Intregrated Variant Information System (I-VIS)
  - how to include external knowledge
  - dificult: semantic data integration - Normalization
  - mapping to standard ID-room (which one?)

Sie sehen den Bildschirm von Prof. Dr. Ulf Leser | Optionen anzeigen

Impact of NGS-based Precision Oncology

- Does it help at all?

- Several ongoing / past trials
  - NCT Master, SHIVA, NCI Match, I-Spy, MOSCATO …
- Results
  - Patients with actionable variant: 10-40%
  - Patients with targeted therapy: 5-15%
  - No prolonged overall survival
- Problem: Difficult cases with rare molecular make-up
  - Heterogeneous patient groups outside clinical guidelines
  - Patients often die rapidly – effect of drugs remains unknown



Sicherheit | Teilnehmer 19 | Umfragen | Chat | Bildschirm freigeben | Aufzeichnen | Reaktionen | Verlassen

Summary: hot topics

Accessibility of relevant data

- identified vs. de-identified
- patient consent - follow up MII / synthetic data / data donation

Integratibility of the data

- formats, okstandards, terminologies
- information models (GECCO Plus example on COVID-19)
- visualization and UI

Interpretability (black box?)

- visualization (heat maps etc.
- role of the manufacturer (will come: "one stop shop")

Tangibility in hospital-infrastructure

- functionality
- MDR, liability
- usbility
- acceptance

from prototype to sustainable infrastucture!!

2

1. What is your main area of work? (Mehrfachauswahl)

Medical Informatics	(2/11) 18%
Bioinformatics	(7/11) 64%
Biometry	(1/11) 9%
Epidemiology	(1/11) 9%
Medicine	(0/11) 0%
Systems Medicine	(0/11) 0%
Other	(1/11) 9%

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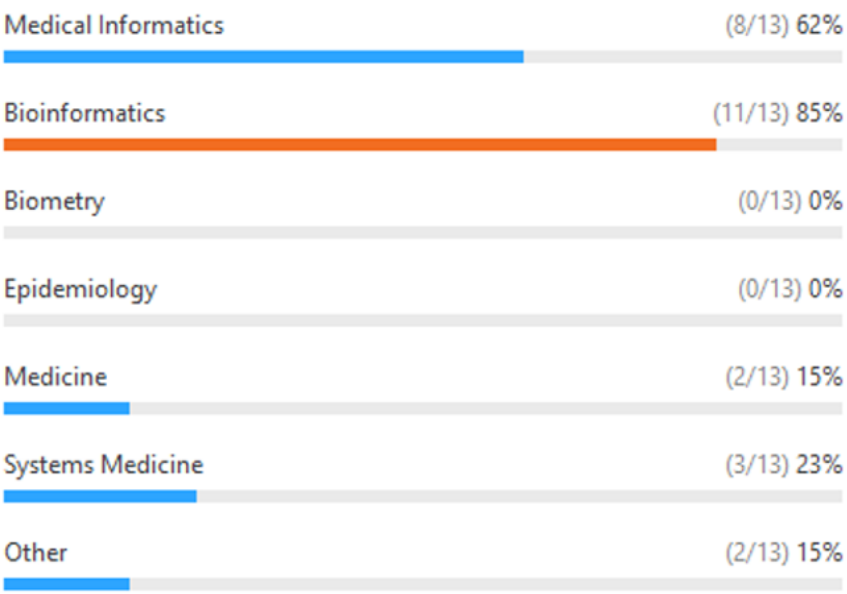
1. Which areas did you learn something about in this workshop? (Mehrfachauswahl)



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1. Do you think there is a difference between Medical Informatics and Medical Bioinformatics?

No	(0) 0%
Mainly semantic	(1) 10%
There is a lot of overlap	(7) 70%
Some overlap but big difference	(2) 20%
Completely disjunct fields	(0) 0%

6

1. Will Omics play a role in Clinical Decision making?

6

1. Will AI play a role in Clinical decision making?

Yes	(7) 58%
No	(0) 0%
Distant future	(5) 42%

Outlook

- What would be like to chew on the next months
- Next Steps
- WG meetings
- reports, papers

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