

Personalized Medicine

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Dr. Elodie Malbois

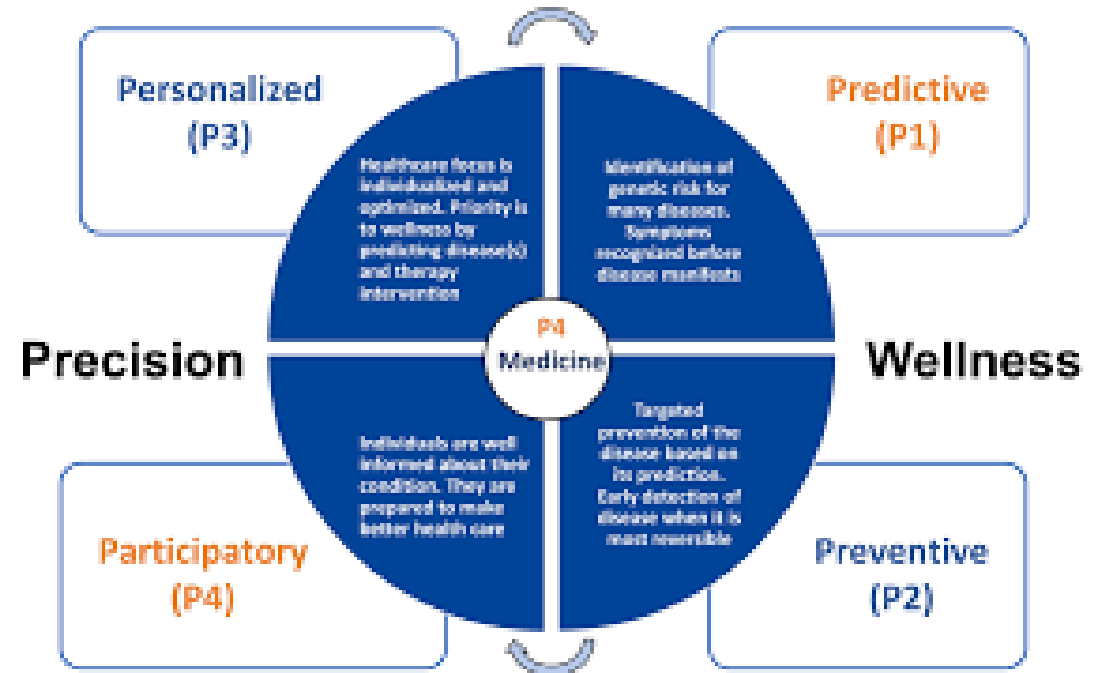


Personalized medicine

- Also called «precision medicine» or «stratified medicine»
- Medical interventions targeted to group of patients
- Prevention, diagnosis and treatment of diseases
- Aims:
 - Finding (more) effective treatments
 - Avoiding ineffective treatments
 - Taking action to prevent illnesses
 - Overall achieving better health

4Ps

- Predictive
- Preventive
- Participatory
- Personalized



Personalized medicine

Better understanding of

- the causes of illnesses (interaction between genetics, lifestyle and environmental factors)
- how genetic traits impact treatment outcome



Examples

- Predicting illnesses through DNA testing
- Treating cancer based on the type of tumor
- Predicting a patient's response to drugs (pharmacogenomics) (e.g. anticoagulant warfarin or abacavir for HIV)
- 3D printing of implant
- Stem-cell treatment based on the patient's cells

Personalized medicine

Fitness apps?





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Black Friday Deal

Basic Ancestry

Explore the unique story written in your DNA, from your global ancestry breakdown out of 4,500+ regions to the relatives who share your genetic legacy.



50% OFF
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Basic Health + Basic Ancestry

Get personalized genetic insights and tools that can help make it easier for you to take action on your health.



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Advanced Ancestry + Health

Membership fueled by discovery, sharpened by time. Provides 100+ genetic insights and action tools.



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Ultimate Health + Advanced Ancestry

Our most advanced health kit. Includes next-generation DNA analyses and blood testing to provide cutting-edge longevity insights and guidance toward a healthier you.



◀ Health, Weight and Lifestyle

SkinCareDNA Test **NOT AVAILABLE**

A Skin DNA test is the ultimate in the preventive treatment and care for your skin, enabling better control of the ageing process by looking at your unique, genetic makeup. The SkinCareDNA test we offer is the most recent and innovative DNA test available and should form the basis of your skin treatment and care – because not everyone's skin is the same.

Online DNA Tests

- Should every young adult be given the opportunity to learn about their health risks thanks to DNA testing?
- What are the opportunities?
- What are the risks?



Research

- To benefit from personalized medicine, we need research
- Such research is based on a lot of data
- What are the ethical issues?



DNA Testing

- What are the ethical issues?
 - Informed consent
 - Privacy
 - Understanding the results

Informed consent

- What are we testing?
- What will the implications be?
- What will be done with the information?

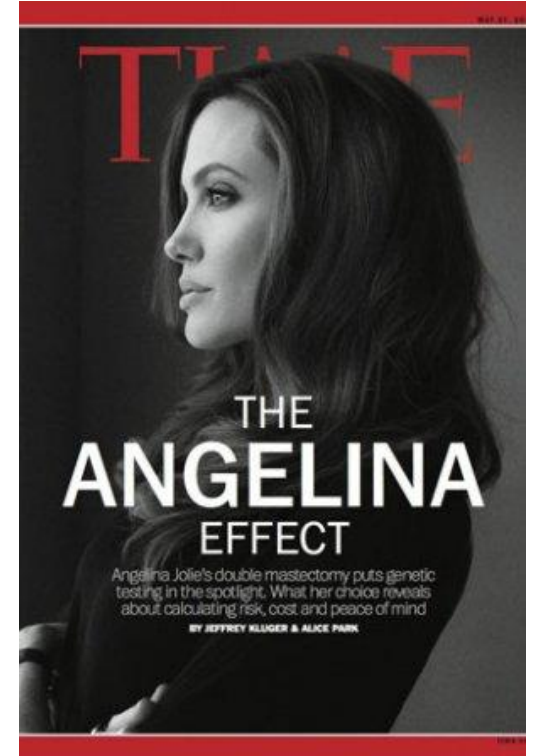
Privacy

- Personal and potentially sensitive data
- Data privacy (might the data be sold?)
- Who has access? Who can order a test?
- Is the data safe?



Case study

Here are the facts: Angelina Jolie's mother died of breast cancer, and Angelina Jolie carries the BRCA1 gene mutation. She estimated that this gene gave her an 87% chance of developing breast cancer and a 50% chance of developing ovarian cancer over the course of her lifetime. She had preventative bilateral mastectomies and reconstruction in February 2013. Since 2013, genetic testing has become even more sophisticated, and genes other than BRCA1 and BRCA2 have been identified as possibly increasing risk for breast cancer.



Empowerment

- Results can empower and motivate patients to take action (e.g. change their lifestyle)
- But can also create pressure, stress, distress
- How is the information understood (fatalism vs false reassurance)?
- Uncertainty/risks
- Discrimination (biased results or discrimination based on results)
- Responsibilisation or over-responsibilisation?

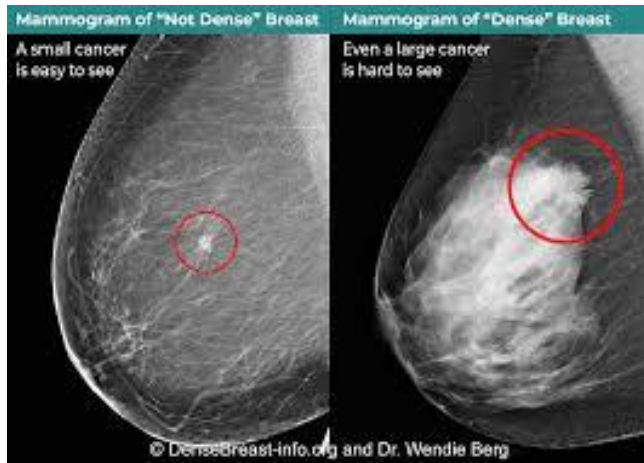
Testing children

Your child is not developing like other children and, at the age of five, has not yet acquired language skills. He shows other signs of mental development disorders. There is no diagnosis. A genomic test could identify the problem. Should you get him tested?



Screening

- Is more screening always good?
- When should we test?



Responsibilization

- Are patients responsible for their illnesses?
- If I know I have a predisposition to lung cancer and I still smoke, am I more responsible?
- Solidarity (health care insurance system)

Patient-doctor relationship

- Risk of de-personalization
- Care based on statistics alone



Costs

- If payed by insurance:
 - Price of testing/drugs
 - Personalized medicine might be more expensive
- If not payed by insurance:
 - Equality of access
 - Potential Digital divide



Conclusion

- Opportunities for health and care
- But several risks
- From personalized care to statistical knowledge about the person
- Allocations of resources in care and research

Oral exam training

You are a member of a cantonal ethics committee and are reviewing a protocol for a phase 1 clinical trial which states that only persons capable of discernment will be included as participants. What are your thoughts on this? What are the ethical issues involved?

Oral exam training

A research group is working on a study protocol on altruism. The idea is that participants play a money game where they can win up to \$2. At the end of the game, they can decide whether they want to donate part of that money to charity. Participants would not be informed of the purpose of the research. They would be told that a study on body language is being conducted.

Questions?