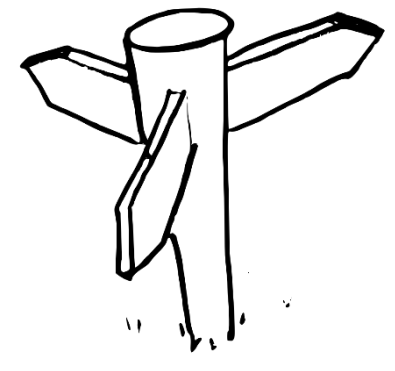


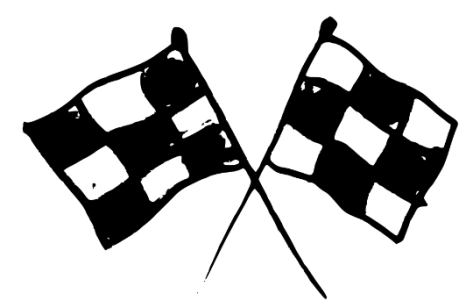
## Sustainable Development in Biomedical Research



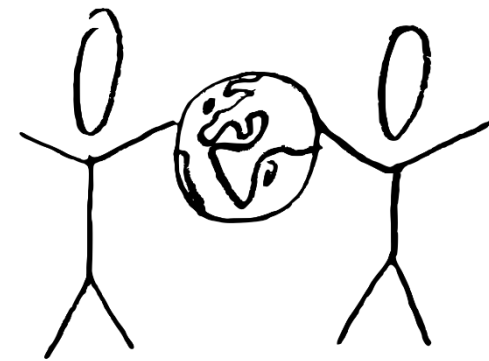
**(1) What & how?** – In Research Animal testing is the most common aspect which does not support sustainability. To overcome this issue current technology is focused on to design an alternative to animal testing in biomedical research. The alternative is invitro modelling of organs or diseases on chip.



**(2) Where?** – The Institution is known as 3-R centre which means Reduce, Replace and Refine animal testing and Micro organo lab in University of Tuebingen.



**(3) Whereto?** – To incorporate full alternative to animal testing in Pharmaceutical industries. The future vision is depicted that instead of preclinical trials on animals, the drugs can be tested on the modelled chips.



**(4) Who?** – There are 5 3-R centers in Baden-Wurtemberg. Univerisity of Tuebingen where the head is Prof. Dr. Peter Loskill,, NMI Reutlingen, University of Stuttgart, University of Heidelberg and University of Konstanz, have the 3-R centre labs.



**(5) Ways beyond?** – Techniques like 3D- Cell cultrues like Spearoids (3-D cell aggregates) , organoids and Tissue models can be cultivated in microchannels on chip.



**(6) But!?** – Extremely skillful task to design and build microcellular environment on chip, Handling of chip fabrication, Optimizing the chip according to natural environment and risk of contamination of cells. Hence, Scientists from Biology, Chemistry and Physics play crucial role in research in thiese projects.



**(7) What's more?** - Informed by our current knowledge in pharmacokinetics and pharmacodynamics , integrated systems with multiple microscale cellular environments can be designed to simulate the human body (body on chip) and make new predictions about the pharmacokinetics of new drugs.

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