Opportunities for collaboration

**CHANNELMAT** wants to take the next step and is looking for:
- infrastructure and know-how of research-oriented companies
- development of marketable concepts for novel products
- knowledge-transfer into already existing products

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Novel microstructured 3D hydrogels

- Interconnected microchannels
- Channels of subcellular size
- Optimal environment for cells
**The Motivation**

Materials providing a large cell-material contact area and well-defined mechanical properties are excellent for controlling cells by mechanotransduction. Porous hydrogels provide such a solution.

Hydrogel requirements:
- to create an environment, which is favorable for cell growth.
- to increase the contact area between cells and their surrounding environment to optimize mechanotransduction.

**The Invention**

The innovative 3D biomaterial serves as a platform for controlling mechanotransduction by mimicking natural 3D cellular environments. It contains a novel form of microporous structures represented by micron-sized channels embedded in a hydrogel matrix of a well-defined stiffness.

**The Production Process**

- Sacrificial template with micron-sized zinc oxide tetrapods in defined density and size
- Embedded zinc oxide template in hydrogel
- Hydrolysis of zinc oxide
- Hydrogel swelling and washing
- 3D hydrogel with interconnected microchannels ready for cell experiments

**The Application**

The specific structure and size distribution of micro-channels in the 3D hydrogel can be used to decontaminate e.g. contact lense cases and water reservoirs from pathogens such as *Acanthamoeba castellanii.*