



# ***Services in Oral Care***



- Vivacell Biotechnology GmbH is a privately owned contract-based research organisation (CRO) that provides specialised *in vitro* and *in vivo* models to test and develop pharmaceuticals, nutraceuticals, phytopharmaceuticals and health care products.
- VivaCell's preclinical services include standard protocols next to protocols individually adapted to customers needs using a large variety of *in vitro* and *in vivo* models.
- VivaCell is combining the latest know-how on cellular and molecular biology and best expertise with focus on oral care, cosmetics, immunology, CNS, nutraceuticals and natural products.
- VivaCell provides the complete range of project development from basic R&D up to pre-clinical research (GLP) in one hand. Our clients have the unique possibility to collect all relevant research data from one single source.
- VivaCell's expertise has been demonstrated in a substantial number of research projects and scientific publications. We have a successful track record over 10 years in oral health care product research and development





## Services in Oral Care

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- Oral care products are mostly used to prevent the oral cavity from caries, gingivitis and periodontitis.
- Gingivitis is caused by gum accumulating bacteria and ends up in red, swollen and bleeding inflammation of the gum. Rarely it caused by injuring the gums from over-vigorous brushing.
- The daily use of selectively enriched oral care products like toothpaste or mouth rinses is the most effective way to prevent gingivitis.
- VivaCell offers highly specialised and reliable models for testing oral care products (tooth paste, mouth wash etc.) for their potential to prevent or treat gingivitis.
- The models are used for testing marketed products as well as for the identification of new active principles and development of new products.
- VivaCell has a well established cooperation in this field with leading oral health care companies.





VivaCell offers the full service to assess prophylactic and acute therapeutic effects of oral care products

All cellular models may be used for testing single chemical identities or diverse galenic formulations.

We offer the use of special filter application to assess the effects of final formulations- simulating a real live application with prophylactic short time or acute treatment protocols.

### **VivaCells provides:**

- Human primary cultures: with monocytes, gingival and periodontal ligament fibroblasts and keratinocytes to determine all relevant inflammation parameters linked to gingivitis and periodontitis (prostaglandins, cytokines, NF-kappaB, free radicals, etc.).
- Capsaicin and menthol receptors (TPRV-1 and CMR1) heterologous transfected cells (artificial tongue) suitable to test new, topically applied analgesic compounds in oral care.
- Epigenetics: miRNA, DNA methylation, HDACs
- Cell proliferation and cell cycle analysis: MTT, Alamar Blue, ATP, FACS
- Phagocytosis: fluorescent beads by FACS
- Lectin binding assay



### VivaCells furthermore provides:

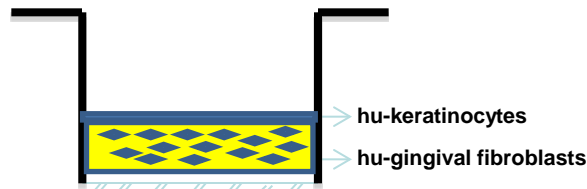
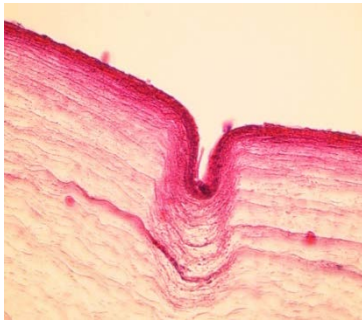
- Wound healing and chemotaxis: cell migration by scratch assay or Oris™ Cell Migration Assay, chemotaxis by Boyden chamber, real-time wound healing assays
- Fibroblast cell line transfected with NF-kappaB promoter (luciferase assay)
- Intracellular signalling: kinases (MAPKs, Akt, PI3J, GSK; PKC etc.) by Western blot/ELISA; transcription factors by luciferase assay (AP-1, CREB etc.). intracellular calcium by FACS or microscope
- MMPs and TIMPs
- Immunohistochemistry and histopathology, video-microscopy, immunofluorescence, 3D-modelling
- Mitochondrial function: respirometry, mitochondrial membrane potential, ATP levels, ROS, anti-oxidant enzymes etc.
- in vivo model of mucositis: X-Ray-induced mucositis and chemotherapy-induced mucositis, (clinical, histochemistry and immunochemistry)
- The capacity to develop new models according the requirements of our customer.



## Tissue models

In addition to various cellular models, VivaCell offers highly specialised tissue models to simulate the *in vivo* situation. Tissue models may be used to test single compounds as well as galenic formulations.

- Gingival epithelial and buccal epithelial tissue
- Effects on human gingival fibroblast/ human keratinocytes co-cultures/3D culture (all parameters)



## Determination of transepithelial electrical resistance

By determination of the transepithelial electrical resistance, we offer to study the effects of compounds and galenic formulations on tight junctions.

## Determination of inflammatory parameters in gingival samples from clinical studies

We offer the determination of inflammatory parameters PGE<sub>2</sub>, IL-1, IL-8 and other cytokines, MMPs, free radicals (isoprostane) in various biological materials or samples from clinical studies.



## **Anti-bacterial activity (in cooperation)**

- Haemophilus actinomycetemcomitans (aerob)
- Streptococcus mutans
- Lactobacillus
- Actinobacillus actinomycetemcomitans (anaerob)
- Porphyromonas gingivalis (anaerob)
- Prevotella intermedia (anaerob)

## **Safety studies (in cooperation, GLP and non-GLP)**

- Cytotoxicity
- Genetic and Mutagenic Toxicology
- Corrosion and Skin Irritation
- Skin Penetration
- Bioavailability

**For more informations, please contact**

**Dr. Bernd Fiebich**  
**VivaCell Biotechnology GmbH**  
**Ferdinand-Porsche Str. 5**  
**D-79211 Denzlingen**  
**M: +49-179-2115187**  
**T: +49-761-4760502**  
[www.vivacell.de](http://www.vivacell.de)  
[fiebich@vivacell.de](mailto:fiebich@vivacell.de)

