

SMEs go LifeSciences – Projects under preparation

1. ADVANCED GENOMICS AND ITS APPLICATION FOR HEALTH

b) Application of knowledge and technologies in the field of genomics and biotechnology for health

Development of new in vitro tests to replace animal experimentation

- LSH-2005-1.2.3-1: Predictive in vitro testing strategies for human exposure to chemicals - INTEGRATED PROJECT.
- LSH-2005-1.2.3-4: Development of new in vitro tests to replace animal experimentation - STREPs dedicated to SMEs

Project # 102

Project #102

Project #102 - WTC Wicht Technologie Consulting - Germany

Date: 2005/06/23	Deadline: 2005/11/09
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Contact

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Familiar with the European Framework Programme? **YES**

PROJECT

Title: In vitro alternative to animal tests	Acronym:
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Project type	STREP
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Status	Planned for submission
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Call references	Call 4th
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Priorities' Main Research Areas	Priority will be given to the development of novel in vitro methods that accelerate testing, rendering it more efficient and robust to the requirements of formal validation for subsequent international regulatory acceptance and finally for world-wide application in industry, regulatory establishments...
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Workprogramme Topic (according to each priority workprogramme)	LSH-2005-1.2.3-4: Development of new in vitro tests to replace animal experimentation - STREPs dedicated to SMEs
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Project description

The project is proposed and will be led by Technische Universität Muenchen (TUM). A central aspect of the present proposal is the replacement of animal testing with a lab-on-chip sensor approach supplied by Technische Universität München (TUM). TUM will supply an in vitro test system that enables multiple parameters to be measured and monitored during testing of chemical species on skin tissue.

Applications include dermatological substance screening (e.g. cosmetics, shampoos, suntan lotion, creams), toxicity testing and so forth using cell reaction; end users are R&D laboratories at large pharmaceutical companies, animal research testing facilities, validation centers, admission centers, etc.

The approach employs assays to monitor changes at cellular level, e.g. extracellular acidification and cellular respiration as determining factors for metabolic changes, as well as changes in cell adhesion and morphology. Measurements occur in real time and the approach obviates the need for optical fluorescence labels.

The system is based on a low-cost ceramic chip with integrated multi-parametric sensors comprising of O₂ concentration, pH, electrical impedance and temperature. Variations of the envisaged device have been previously developed and tested to prototype phase together with several industrial partners.

Aside from obvious benefits to the animal population, corporate company image, etc, the proposed technological approach offers the following benefits:

- Quantifiable, objective testing methodology with improved documentation, i.e. ideal tool for testing and validation
- Parallel testing for high volume throughput
- Parallel high content screening
- Direct, cellular level changes are continuously monitored in real time (not limited to end point test)
- No animal testing (tests with humane cells)
- Lower cost than current animal testing approaches
- Wireless data transfer and automated test control
- Low cost, disposable chip technology
- Very low volume (micro-liter range) sample delivery requirements compared to current milliliter levels.
- Storage reservoirs provide for handling / delivery of different substances.

Development Issues

Areas of further development include electronic sensor control, automated liquid handling (microfluidics), and industry-specific software.

	<p>Partners in place / strong interest</p> <ul style="list-style-type: none"> - TUM (DE): project lead, technology for in vitro chip-based skin test as replacement to animal testing - WTC: Project administration/dissemination - Heraeus (DE): volume source of disposable ceramic sensor chips (100,000+ / year) - H&P Labortechnik (DE): Analytical instrument (engineering and realization of system) - Feldkraft (DK): dynamic marking technology, associated electronics - Lionix BV (NL): Microfluidic technology - SHZ GmbH (DE): software <p>Partners Required</p> <ul style="list-style-type: none"> - Electronics, e.g. chip connections in array, packaging - Clinical partners for characterisation / validation of method (reproducibility, accuracy, comparison with state of the art) – contact to clinics in France, UK, Italy, etc. - Life-science platform software, data treatment - The leading pharmaceutical companies and research laboratories as validation/test partners, technology champions, end users, e.g. Sanofi-Aventis, Altana Pharma, Astra Zeneca, Roche, cosmetic / consumer entities such as L’Oreal, Wella, etc. - EU certification contact partner.
<p>Keywords</p>	<p>in vitro methods, replacement of animal testing, lab-on-chip, sensor technology, validation</p>

Partners already involved	<p>1. Technische Universität München (TUM), Heinz-Nixdorf-Lehrstuhl as coordinator: TUM has a leading reputation in the field of developing lab-on-chip and telemedicine technology, e.g. for chemotherapy and environmental monitoring, in addition to industry-level product development experience through extensive industry cooperation. TUM offers pre-existing knowledge in dynamic marking technology, microsensor and chip technology, telemedical devices, electronic equipment and excellent industrial connections. 2. WTC Wicht Technologie Consulting (DE): Project administration/dissemination 3. Heraeus (DE): volume source of disposable ceramic sensor chips (100,000+ / year) 4. H&P Labortechnik (DE): Analytical instrument (engineering and realization of system) 5. Feldkraft (DK): dynamic marking technology, associated electronics 6. Lionix BV (NL): Microfluidic technology 7. SHZ GmbH (DE): software</p>		
Project budget (for the running projects)	nc	Budget reserved for SMEs	nc

Research topics

- LSH-2005-1.2.3-4: Development of new in vitro tests to replace animal experimentation - STREPs dedicated to SMEs

Profile of SME sought

Role	technology development, research, demonstration
Country /region	no preferences
Start of partnership	start-up phase

Expertise required

TUM is relatively advanced with the technology development and partners constellation, but searches for the following:

- Electronics, e.g. chip connections in array, packaging
- Clinical partners for characterisation / validation of method (reproducibility, accuracy, comparison with state of the art) – contact to clinics in France, UK, Italy, etc.
- Life-science platform software, data treatment
- The leading pharmaceutical companies and research laboratories as validation/test partners, technology champions, end users, e.g. Sanofi-Aventis, Altana Pharma, Astra Zeneca, Roche, cosmetic / consumer entities such as L'Oreal, Wella, etc.
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