A Small Magnetic Pill for Monitoring the Mixing and Propelling Functions of the Gut.

A Novel and Non-Invasive Technology for Drug and Food R&D.

**MTS-1 Motilis Tracking System**

Detector adapted for large animals (dog, pig)

Pill designed for dog (left) and rat (right)

Detector for rodents - rat, mouse, rabbit - with real time display of the motility
Our Innovative Approach

Motilis offers a unique non-invasive technology to measure the mechanical activity of the digestive tract. An ingestible pill, containing a permanent magnet, combined with an external array of magnetic field sensors allows the recording of the local activity and of the dynamics of the transit, for each segment of the GI tract and with a very good spatio-temporal resolution.

Key Advantages

- Measurement of motility & transit simultaneously
- Translation preclinical -> clinical
- Non-invasive
- Cost-effective

MTS is the unique technique which allows the simultaneous measurement of GI motility and transit.

The technique can be translated from preclinical to clinical application: the proposed functional examination is available for small (rodents) and large animals as well as for human.

The market of gastrointestinal diagnostic turns towards capsule-based explorations as patient-friendly alternatives to invasive examinations that have dominated the market for decades.

Motilis’ product is superior to existing functional exploration devices because:

- it is non-invasive, allowing for long-term and repeated studies
- it can be used for measurement of the entire GI tract
- it provides new and physiologically relevant information
- it is cost-effective

Our product differs from the other capsule-based product: PillCam (GivenImaging) is complementary to classical endoscopy, but brings no improvement for functional dysfunctions; Bravo (Medtronic), for pH measurement, is limited to diseases of the oesophagus.

Motilis’ product aims to become the “gold standard” in functional GI exploration.
Applications

- Today: Drug & food R&D, first clinical studies
- Future: Diagnostic tool for gastroenterologists

Today: R&D

First of all, Motilis addresses the R&D market for drug & food development. More knowledge of gastrointestinal dysfunctions is required for designing better drug treatments and customizing them.

Industry and academic laboratories are also waiting for a novel tool to better study motility under different conditions or to better understand the physiology of this relatively unknown and complex function of the “abdominal brain”.

Motilis’ product is the ideal tool to understand and evaluate, in animal and in human, the effect of:

- Existing and new GI drugs
- Side effects of drugs
- Food intake and composition
- Electrotherapy (SNS, obesity)
- Surgical interventions
- Biofeedback
- Stress
- Maturation of the gut
- Knockout genes
- and others

Scientific publications (more references on our website):

Next development: Clinical Tool

- Improved diagnostic → localization of the medical problem?
- Targeted therapy → monitor efficacy
- Guided surgery

A tool to support the diagnostic of GI functional troubles, more specifically for

- Dyspepsia,
- Gastroparesis
- Constipation
- Irritable bowel syndrome (IBS).

It will answer the main questions: Where is the problem located? Is it permanent or intermittent? Does it respond to the therapy?

A tool to help doctors in the prescription of the adequate therapy and in the monitoring of its efficacy. This would be a major improvement over the trial-and-error treatment strategies mostly used today.
Output
Translation and rotation of the pill reflect the GI Motor Pattern. 3D and time display of raw data is sufficient for the localization (transit time) and a first evaluation of the local activity. Data post-processing provides:

- Transit time segment by segment
- Detailed dynamics of the progression
- Localization
- Analysis of rhythms
- Index of motility

Local Activity

**Stomach, 2.8 cpm**

**Small Intestine, 9.5 cpm**

Effect of drugs visible in real time

**Opioid** (oral, dog, stomach)

**Ketamine** (i.v., pig, colon)

**Prokinetic** (i.v., dog, stomach)
**Products Description**

- **Today:** **MTS-1** fixed detector, pill of any dimensions
- **Future** (available in 2009): **MTS-2** ambulatory device, several pills simultaneously

MTS-1 is a versatile device. The system has been scaled down, so that it is available for rodents as well as for large animals. Moreover, size and density of the capsule, as well as position of the detector are easily adaptable to various studies.

**Magnetic environment.** MTS-1 operates in a normal environment, no shielded room is required. The detector must be immobile during the recordings (calibration for the Earth’s magnetic field). Large moving ferromagnetic objects (e.g. elevator) close to the detector may produce artefacts.

**External sensors** make possible the detection of artefacts due to movements and breathing of the subject.

**Pricing** (year 2008)

**38'500 CHF** (~23'700 EUR)

Discount (parallel recordings):
- 10 % for 2-3 devices
- 25 % for 4-7 devices
- 30 % for 8 devices or more

Taxes and shipping cost not included.

Delivery time: usually 1 month.

**Hardware parts**

**Included software**

- 1 Detector
- 1 Power supply
- 1 Acquisition & Viewer software Basic
- 1 Bluetooth USB dongle (when required)
- 1 Day for on site installation (travel cost not included)
- 1 Year maintenance and support “gold”
  (value 4'000 CHF including updates, recalibration, full user support; travel and shipping cost not included).

**System Requirement:**

PC Compatible computer with >1 Ghz CPU and 512 MB RAM, 32 MB or more Graphic card recommended.


**Related Products**

**For rodents**

- Restriction Box (size XS,S,M,L) 259.- CHF
- Vibration sensor 189.- CHF
- Magnetic Pill 1 mm (gold coated) 50.- CHF

**For large animals**

- Movement sensor (non ferromagnetic) 189.- CHF
- Respiration Belt (non ferromagnetic) 299.- CHF
- Magnetic Pills size #3 50.- CHF

**Not Included:**

Stand for hammock adaptation, request for a quote.

**MTS-1 rental** (rodents or large animal)

- Staff for data acquisition, technical teaching, training...
- Laptop computer

1'000.- CHF/Day (50% refund possible on purchase)

Taxes and shipping cost not included.