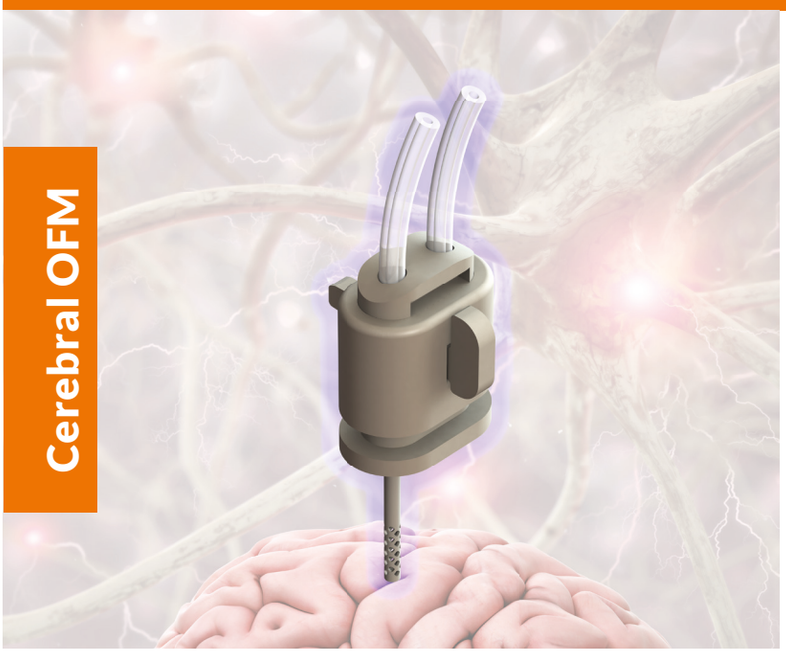
BASi
Better Data Driving Better Decisions

JOANNEUM RESEARCH

Interstitial In Vivo Sampling of Large and Lipophilic Substances

# Open Flow Microperfusion (OFM)

Products and Contract Research Services





## Minimally invasive Open Flow Microperfusion (OFM) permits:

- Continuous tissue sampling in the extracellular compartment without the limitations of membranes
- Direct access to the interstitial fluid (ISF) of brain (cOFM), skin (dOFM), and adipose tissue (aOFM)
- Time-resolved measurements (continuous sampling) for up to 4 days (validated) or more (exploratory)
- With cOFM multiple sampling sessions can be performed, obtaining representative data from the same animal and reducing the number of animals

## OFM derives better data and drives better decisions

- Valuable tool in Neuroscience, Dermatology, Oncology, Biomarker and PK/PD research
- Monitoring of substances with excellent temporal resolution
- Absolute quantification of substances
- No limitation regarding lipophilicity, protein binding, molecular size including antibodies, nanocarrier up to living cells
- Competitive edge in characterizing
  - Neurotransmitters
  - Bound and Unbound Drug
  - Peptides and Proteins
  - Antibodies
  - Transporters
  - Enzymes
  - Vesicles
  - Cells

  in pig, rat, mouse (validated), primate, dog (exploratory)
- Reduces costs and development time by providing the pharmacological profile of a drug at an earlier phase in drug development. Companies thus learn at a very early stage whether a drug has the potential to be marketed

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## Peristaltic pumps for clinical, preclinical & laboratory use

- standard flow rates: 0.1-10µL/min with ±10% accuracy
- no flow rate calibration necessary
- 6 channels
- 2 separate controllable pump heads
- wearable
- battery- or power supply

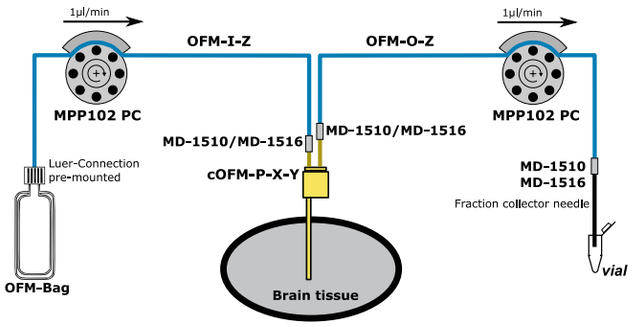
*cOFM-CA*

## cOFM – cerebral OFM

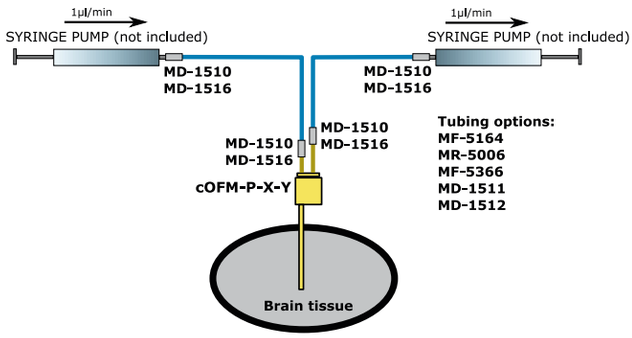
- allows us to see beyond the blood-brain barrier (BBB)
- allows to investigate the concentrations and action of neurological drugs (PK/PD) directly in the brain
- allows the BBB to be re-established after 11 days from implantation
- allows to continuously monitor the BBB and show its intactness
- facilitates the continuous measurement of the drug transport across the intact BBB

We offer 2 complete **cOFM** product setups:

1. **cOFM-CA** – conscious animal (rodents) setup for sampling in the brain
2. **cOFM-AA** – anesthetized animal setup for sampling in the brain. Especially for critical (e.g. high lipophilic) substances, where adsorption is reduced by short tubing length and alternative product surfaces




*Schematical drawing of **cOFM-CA***



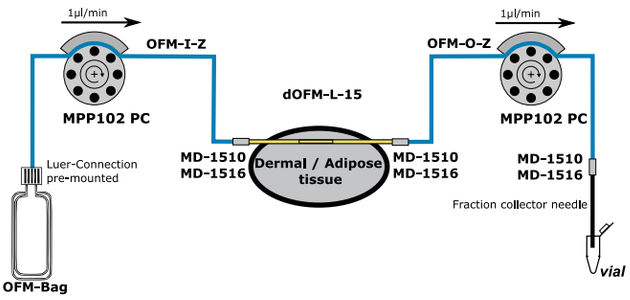

*Schematical drawing of **cOFM-AA***

## dOFM – dermal OFM

- allows to investigate the concentrations and action of dermatological drugs (PK/PD) directly in the dermis
- allows to monitor the transport and effects of drugs in the dermis after topical or systemic application; e.g., topical glucocorticoids and systemic antibodies with psoriatic or inflammatory animal models

## aOFM – adipose OFM

- allows to investigate the concentrations and action of drugs (PK/PD) directly in the adipose tissue no matter of the mode of administration (oral, subcutaneous, topical, intravenous or other)
- allows in combination with glucose-clamp techniques the investigation of insulin sensitivity as well as concentration of insulin and its effect in the subcutaneous tissue




*Schematical drawing of **dOFM/aOFM***

### cOFM-CA setup

| Part Number | Description |
|---|---|
| MPP102 PC | Microperfusion Pump Preclinical<br>Flow rates: 0.1µL/min to 10µL/min<br>Includes: US-Power supply (Battery not included) |
| OFM-Bag | Perfusate container (10 mL) for use with MPP102 PC<br>Perfusate (aCSF) not included |
| cOFM-P-X-Y | OFM Brain Probe Kit® (X mm shaft, Y mm open length)<br>Standard probes:<br>X = 2, 3, 4, 5, or 6 mm OD 0.5 mm<br>Y = 1 mm or 2 mm Customized probes on request<br>Includes:<br>1 X cOFM-G-X-Y Guide Cannula with Y mm open length<br>1 X cOFM-D-X Healing Dummy<br>1 X cOFM-S-X Sampling Insert |
| OFM-I-Z | Single Channel OFM Inlet tubing, Z mm length<br>Luer-Lock connection pre-mounted for use with OFM-Bag |
| OFM-O-Z | Single Channel OFM Outlet Tubing, Z mm length |
| OFM-I3-Z | Three Channel OFM Inlet tubing, Z mm length<br>Luer-Lock connection pre mounted for use with OFM-Bag |
| OFM-O3-Z | Three Channel OFM Outlet Tubing, Z mm length |
| MD-1510/MD-1516 | Tubing Connectors |
| AMD-R / MD-1404<br>MD-1409 | Raturn Caging System |
| MD-1201/MD-1202 | Refrigerated Fraction Collector |

*Compatible low binding vials and Stereotaxic Probe holder are available*

### cOFM-AA setup

| Part Number | Description |
|---|---|
| cOFM-P-X-Y | OFM Brain Probe Kit®<br>(X mm shaft, Y mm open length)<br>Standard probes:<br>X = 2, 3, 4, 5, or 6 mm OD 0.5 mm<br>Y = 1 mm or 2 mm Customized probes on request<br>Includes:<br>1 X cOFM-G-X-Y Guide Cannula with Y mm open length<br>1 X cOFM-D-X Healing Dummy<br>1 X cOFM-S-X Sampling Insert |
| MF-5164, MR-5006,<br>MF-5366, MD-1511,<br>MD-1512 | Tubing Options |
| MD-1510/MD-1516 | Tubing Connectors |

### dOFM/aOFM setup

| Part Number | Description |
|---|---|
| MPP102 PC | Microperfusion Pump Preclinical<br>Flow rates: 0.1µL/min to 10µL/min<br>Includes: US-Power supply (Battery not included) |
| OFM-Bag | Perfusate container (10 mL) for use with MPP102 PC<br>Perfusate not included |
| OFM-I-Z | Single Channel OFM Inlet tubing, Z mm length<br>Luer-Lock connection pre-mounted for use with OFM-Bag |
| OFM-O-Z | Single Channel OFM Outlet Tubing, Z mm length |
| OFM-I3-Z | Three Channel OFM Inlet tubing, Z mm length<br>Luer-Lock connection pre mounted for use with OFM-Bag |
| OFM-O3-Z | Three Channel OFM Outlet Tubing, Z mm length |
| dOFM-L-15 | OFM Linear Probe Kit (15 mm open length)<br>Shaft length: 200 mm<br>OD 0.55 mm<br>Includes: Mandrel (Stainless steel) |
| MD-1510/MD-1516 | Tubing Connectors |
| AMD-R / MD-1404<br>MD-1409 | Raturn Caging System |
| MD-1201/MD-1202 | Refrigerated Fraction Collector |

*Compatible low binding vials and Surgical introducer are available*

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**www.BASinc.com/contact**

Cell +1 765-413-9437
Office +1 765-497-5849
Fax +1 765-497-8388