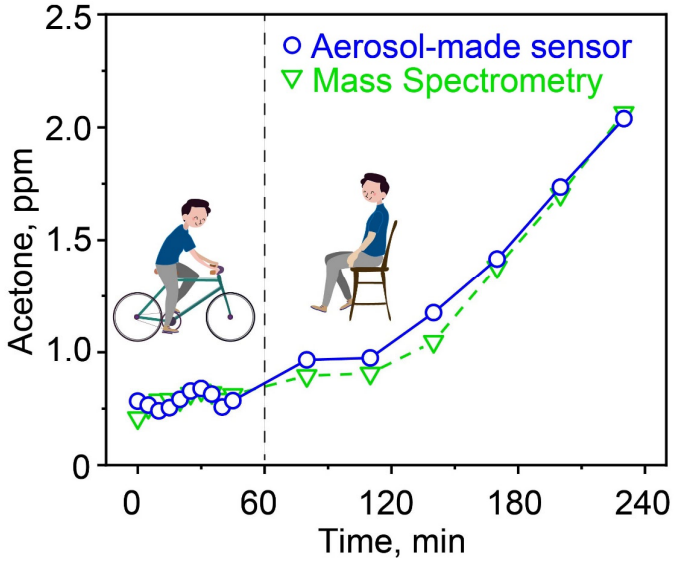
ETH zürich

Therapeutic lipolysis monitoring with an aerosol-made sensing device



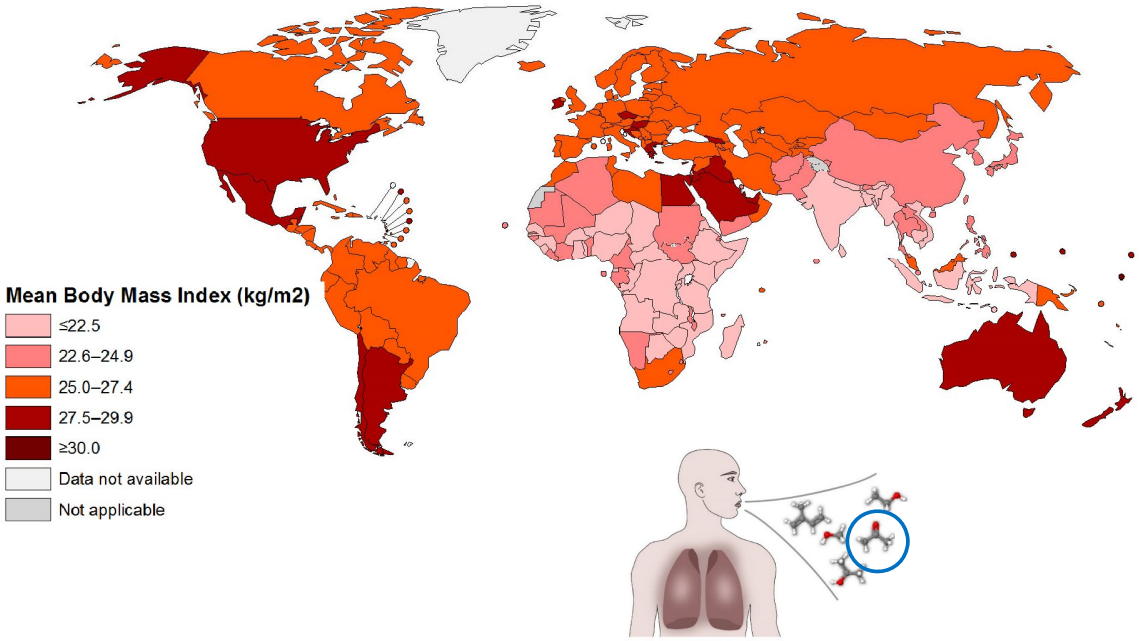
Ines C. Weber[1], Nina Derron[2], Philipp A. Gerber[2], Andreas T. Güntner[2], Sotiris E. Pratsinis[1]

[1] Particle Technology Laboratory, ETH Zürich, Switzerland

[2] Department of Endocrinology, Diabetology, and Clinical Nutrition, University Hospital Zürich, Switzerland

ETH zürich

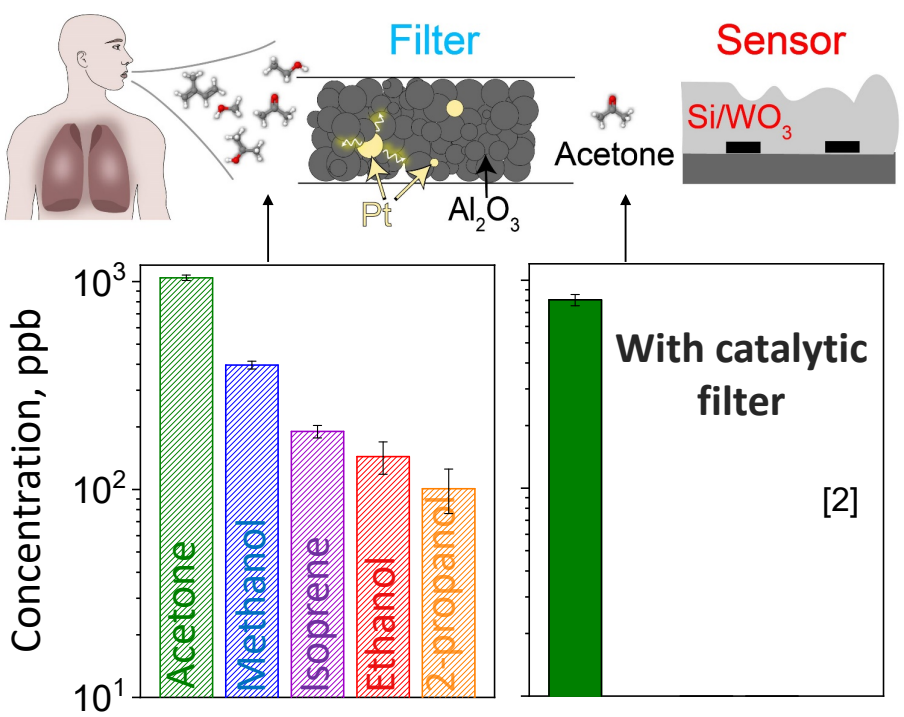
Metabolic health: global concern



Breath acetone: personalized and routine fat burn monitoring

1. Kundu SK, Bruzek JA, Nair R, Judilla AM, *Clin. Chem.* **1993**, 39, 87.

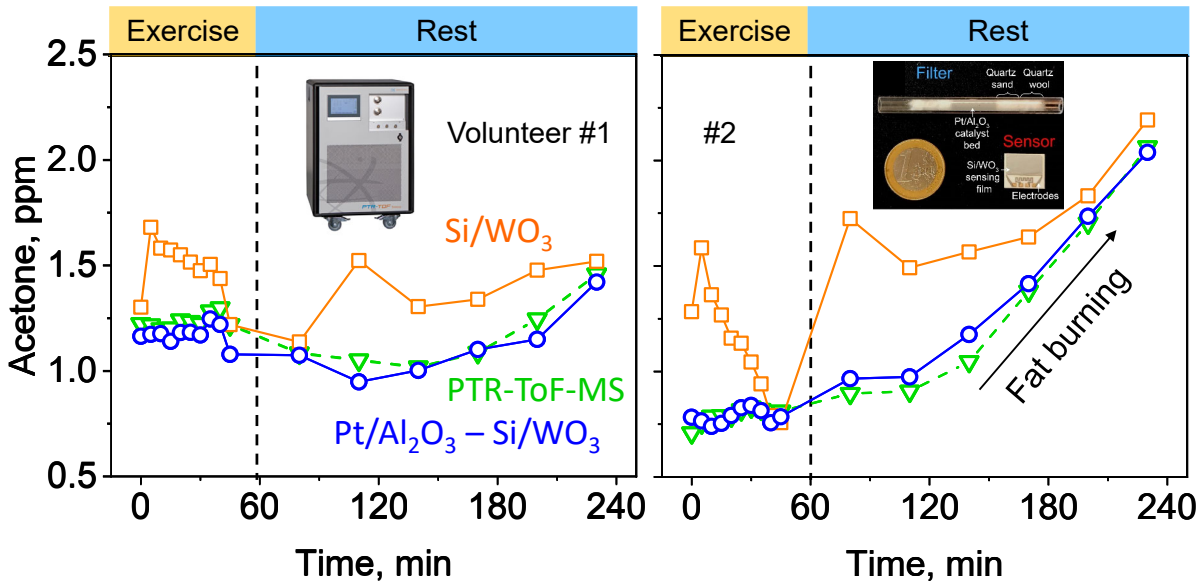
Acetone detection with aerosol-made detector



Detector details: AMT P4:

1. Weber IC, Braun HP, Krumeich F, Güntner AT, Pratsinis SE, *Advanced Science*, **2020**, 7, 2001503.
2. Weber IC, Derron N, Königstein K, Gerber PA, Güntner AT, Pratsinis SE. *Small Science*, **2021**, 2100004

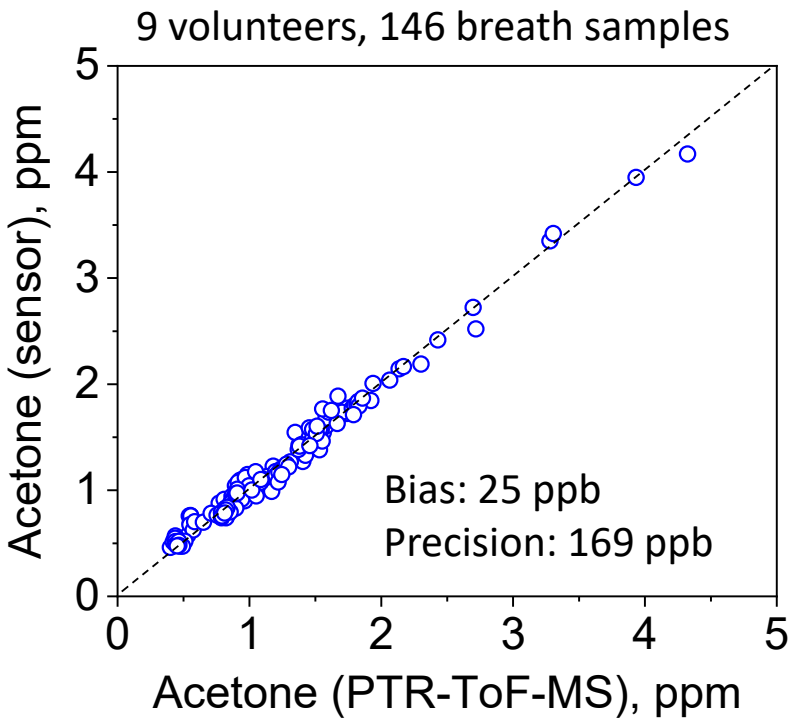
Acetone quantification in breath



Aerosol-made device enables easy fat metabolism tracking

Weber IC, Derron N, Königstein K, Gerber PA, Güntner AT, Pratsinis SE. *Small Science*, **2021**, 2100004

Acetone quantification in breath

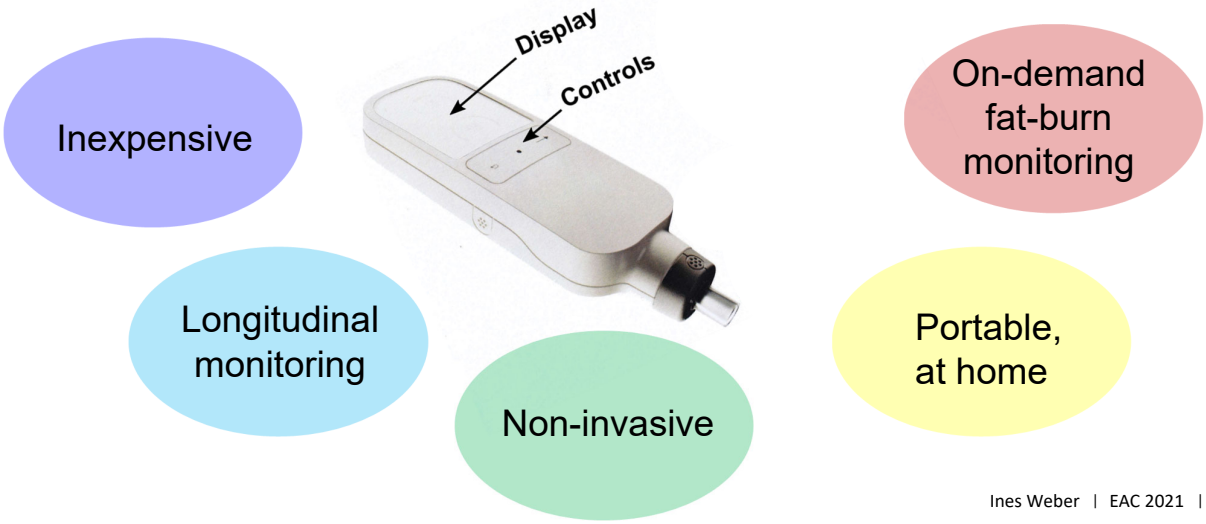


Weber IC, Derron N, Königstein K, Gerber PA, Güntner AT, Pratsinis SE. *Small Science*, **2021**, 2100004

Conclusions & vision

- Selective acetone detection in breath
- Personalized and on-line metabolic monitoring

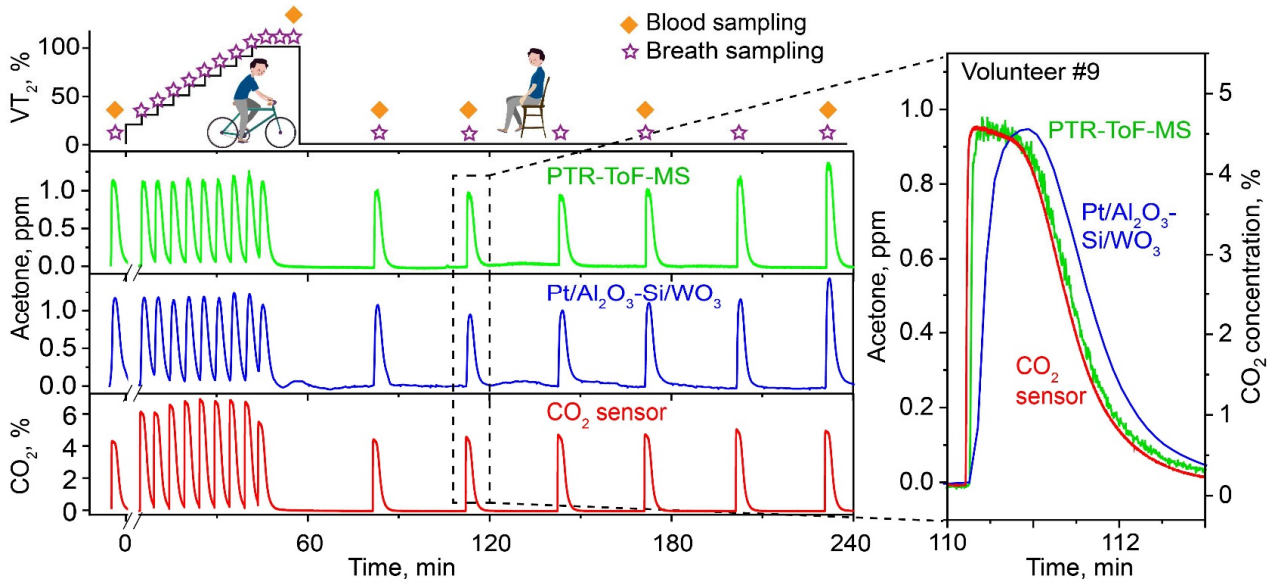
Vision: Low-cost & compact device for distributed use



Weber IC, Derron N, Königstein K, Gerber PA, Güntner AT, Pratsinis SE. *Small Science*, **2021**, 2100004.

On-line monitoring during exercise & rest

9 volunteers. 146 breath samples



- Fast detector dynamics
- On-line monitoring during exercise

Herbig, J.; Titzmann, T.; Beauchamp, J.; Kohl, I.; Hansel, A. *J. Breath Res.* **2008**, *2*, 037008.
Righettoni, M.; Ragnoni, A.; Güntner, A. T.; Loccioni, C.; Pratsinis, S. E.; Risby, T. H. *J. Breath Res.* **2015**, *9* (4), 047101.