

Biological workflow of the NutriChip project

G. Vergères¹, F. Schwander¹, K. Bolanz¹, L. Corbino-Giunta¹, D. Gille¹, B. Bogicevic¹, C. Bur², R. Portmann¹, C. Egger¹, P. Silacci¹, B. Walther¹, R. K. Laederach², M. Chollet¹, A. Schmid¹, N. Petri¹, F. Pralong³, N. Vionnet³, M. Gijs⁴

¹Agroscope Liebefeld-Posieux ALP, ²Inselspital Bern, ³CHUV, Lausanne, ⁴EPFL Lausanne

Molecular characterization of dairy products

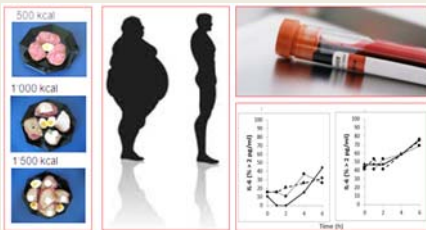


Human nutritional studies (in vivo)

- Digestion
- Intestinal transport
- Activation of immune system

Phase 1

- Non-dairy high-fat meal in obese and normal weight subjects



IL-6 inflammatory response

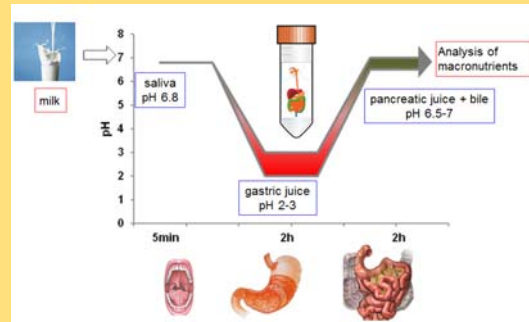
Phase 2

- Dairy meal in obese and normal weight subjects (ongoing)

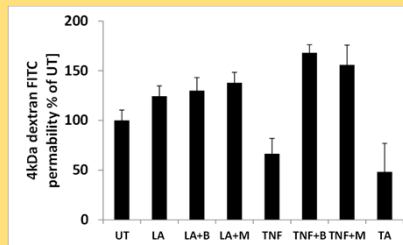
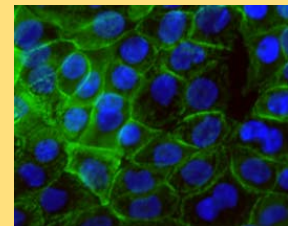
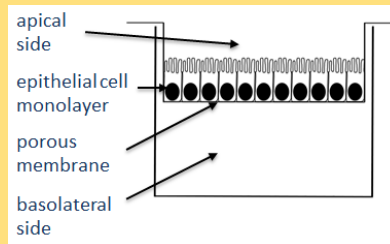


Laboratory in vitro models (in vitro)

- Digestion (static 3-steps)

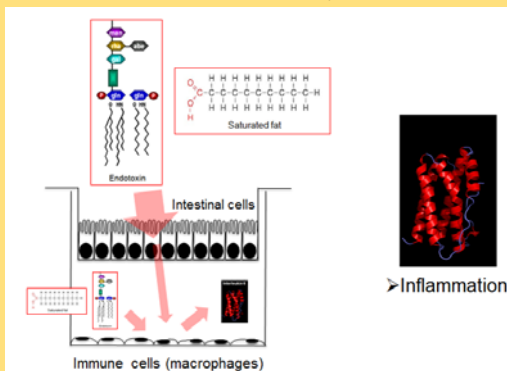


- Intestinal barrier – quality and interaction with nutrients



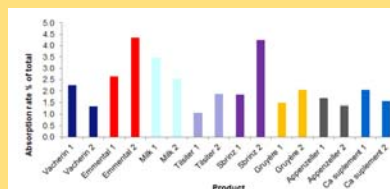
Permeation of 4kDa FITCS-dextran under the influence of various biological and nutritional stimuli (UT: untreated; LA: lauric acid; B: digestion buffer, M: digested milk; TNF: tumor necrosis factor, TA: taurocholic acid)

- Intestinal barrier - inflammatory activation



Nutrient inflammatory models

- Intestinal barrier – transport of nutrients



Relative transport of calcium present in digested dairy products through Caco-2 cells