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### 1) Dynamic co-culture metabolic models reveal the fermentation dynamics, metabolic capacities and interplays of cheese starter cultures

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* https://doi.org/10.1002/bit.27565
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* Published Jan 2021 (early online 14 Sep 2020)
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In this study, we have investigated the cheese starter culture as a microbial community through a question: can the metabolic behaviour of a co-culture be explained by the characterized individual organism that constituted the co-culture? To address this question, the dairy-origin lactic acid bacteria Lactococcus lactis subsp. cremoris, Lactococcus lactis subsp. lactis, Streptococcus thermophilusand Leuconostoc mesenteroides, commonly used in cheese starter cultures, were grown in pure and four different co-cultures. We used a dynamic metabolic modelling approach based on the integration of the genome-scale metabolic networks of the involved organisms to simulate the co-cultures. The strain-specific kinetic parameters of dynamic models were estimated using the pure culture experimentsand they were subsequently applied to co-culture models. Biomass, carbon source, lactic acid and most of the amino acid concentration profiles simulated by the co-culture models fit closely to the experimental resultsand the co-culture models explained the mechanisms behind the dynamic microbial abundance. We then applied the co-culture models to estimate further information on the co-cultures that could not be obtained by the experimental method used. This includes estimation of the profile of various metabolites in the co-culture medium such as flavour compounds producedand the individual organism level metabolic exchange flux profiles, which revealed the potential metabolic interactions between organisms in the co-cultures.

### *2) A schematic sampling protocol for contaminant monitoring in raptors*

* Espín, S., Andevski, J., Duke, G., Eulaers, I., Gómez-Ramírez, P., Hallgrimsson, G. T., Helander, B., Herzke, D., Jaspers, V. L., Krone, O., Lourenço, R., María-Mojica, P., Martínez-López, E., Mateo, R., Movalli, P., Sánchez-Virosta, P., Shore, R. F., Sonne, C., van den Brink, N. W., van Hattum, B., Vrezec, A., Wernham, C., García-Fernández, A. J.
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* Published Jan 2021 (early online 12 May 2020)
* Processed: 2021-1

Birds of prey, owls and falcons are widely used as sentinel species in raptor biomonitoring programmes. A major current challenge is to facilitate large-scale biomonitoring by coordinating contaminant ...

### *3) Receptor-based in vitro activities to assess human exposure to chemical mixtures and related health impacts*

* Vinggaard, A. M., Bonefeld-Jørgensen, E. C., Jensen, T. K., Fernandez, M. F., Rosenmai, A. K., Taxvig, C., Rodriguez-Carrillo, A., Wielsøe, M., Long, M., Olea, N., Antignac, J. P., Hamers, T., Lamoree, M.
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* Published Jan 2021 (early online 14 Oct 2020)
* Processed: 2021-1

Humans are exposed to a large number of chemicals from sources such as the environment, food, and consumer products. There is growing concern that human exposure to chemical mixtures, especially durin ...

### *4) Asymmetrical flow field-flow fractionation to probe the dynamic association equilibria of β-D-galactosidase*

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* https://doi.org/10.1016/j.chroma.2020.461719
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* Published 4 Jan 2021 (early online 13 Nov 2020)
* Processed: 2021-1

Protein dynamics play a significant role in many aspects of enzyme activity. Monitoring of structural changes and aggregation of biotechnological enzymes under native conditions is important to safegu ...

### *5) Rapid Screening α-Glucosidase Inhibitors from Natural Products by At-Line Nanofractionation with Parallel Mass Spectrometry and Bioactivity Assessment*

* Liu, R., Kool, J., Jian, J., Wang, J., Zhao, X., Jiang, Z., Zhang, T.
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* Journal of Chromatography A
* https://doi.org/10.1016/j.chroma.2020.461740
* Corresponding author: Jiang, Z.
* Published 4 Jan 2021 (early online 23 Nov 2020)
* Processed: 2021-1

In this study, a novel at-line nanofractionation screening platform was successfully developed for the rapid screening and identification of α-glucosidase inhibitors from natural products. A time-cour ...

### *6) Reducing the influence of geometry-induced gradient deformation in liquid chromatographic retention modelling*

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* Published 4 Jan 2021 (early online 13 Nov 2020)
* Processed: 2021-1

Rapid optimization of gradient liquid chromatographic (LC) separations often utilizes analyte retention modelling to predict retention times as function of eluent composition. However, due to the dwel ...

### *7) Influence maximization in the presence of vulnerable nodes: A ratio perspective*

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Influence maximization is a key problem seeking to identify users who will diffuse information to influence the largest number of other users in a social network. A drawback of the influence maximizat ...