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## New method for skin ceramides profiling by SFC-HRMS

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Justine Bertrand-Michel, Julia Soullier, Cyrielle Clement, Sebastien Hutinet, Roselyne Gautier, et al..  
New method for skin ceramides profiling by SFC-HRMS. Analytics 2022, Sep 2022, Nantes, France.  
hal-04245936

**HAL Id: hal-04245936**

**<https://hal.science/hal-04245936v1>**

Submitted on 17 Oct 2023

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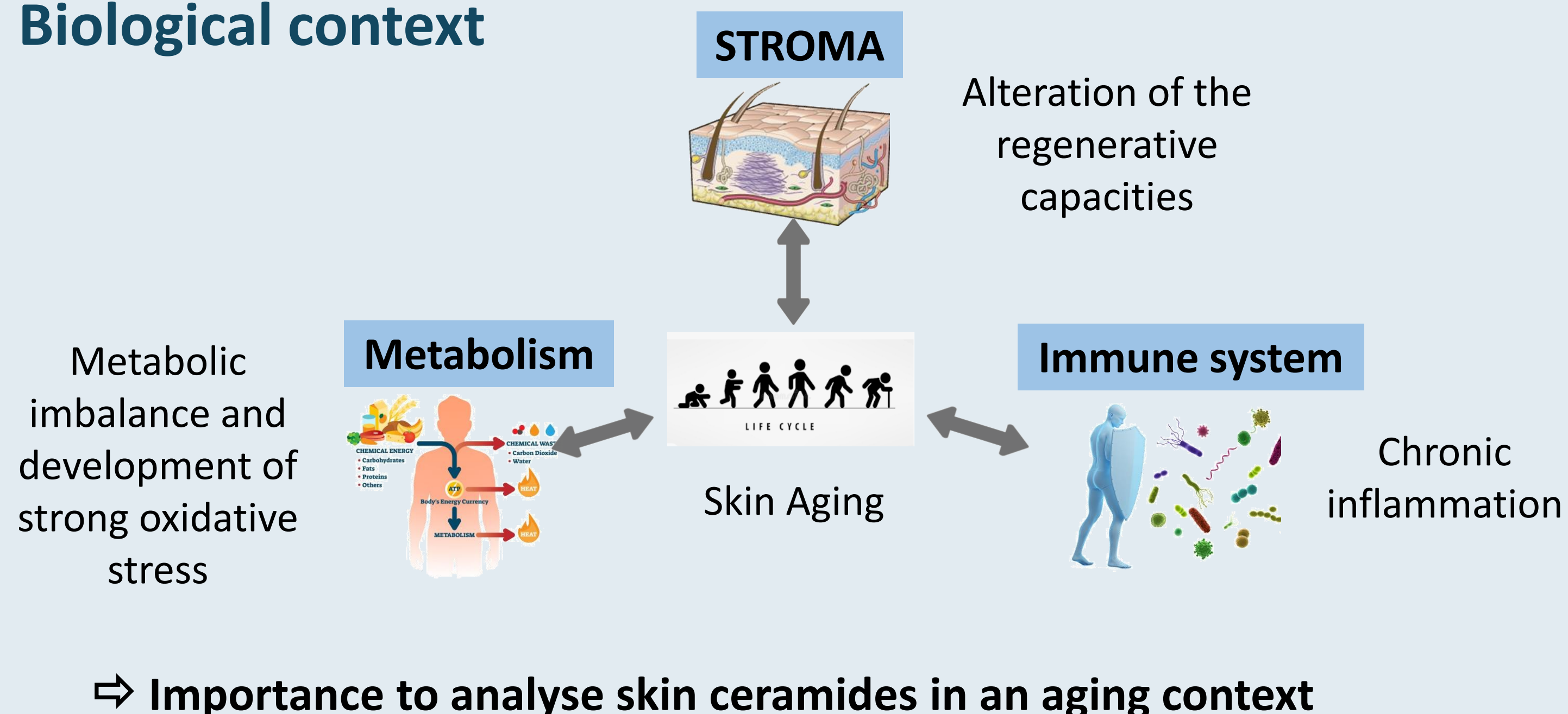
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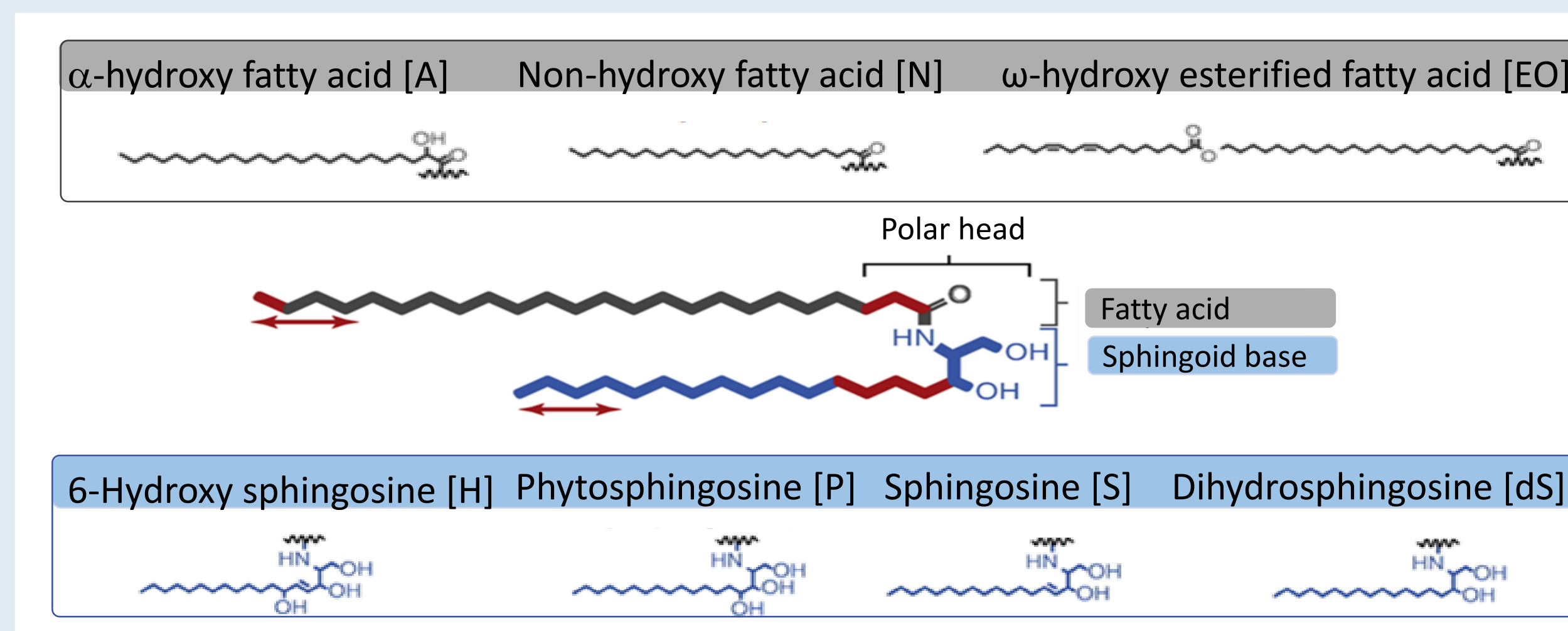
Julia Soullier<sup>1,2</sup>, Pauline Le Faouder<sup>1,2</sup>, Cyrielle Clément<sup>1,2</sup>, Sébastien Hutinet<sup>1,2</sup>, Roselyne Gautier<sup>1,3</sup>, Carla Orlandi<sup>1,3</sup>, Emilien Jamin<sup>1,3</sup>, Helene Duplan<sup>4</sup>, Carine Jacques<sup>4</sup>, Justine Bertrand-Michel<sup>1,2</sup>

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## Biological context

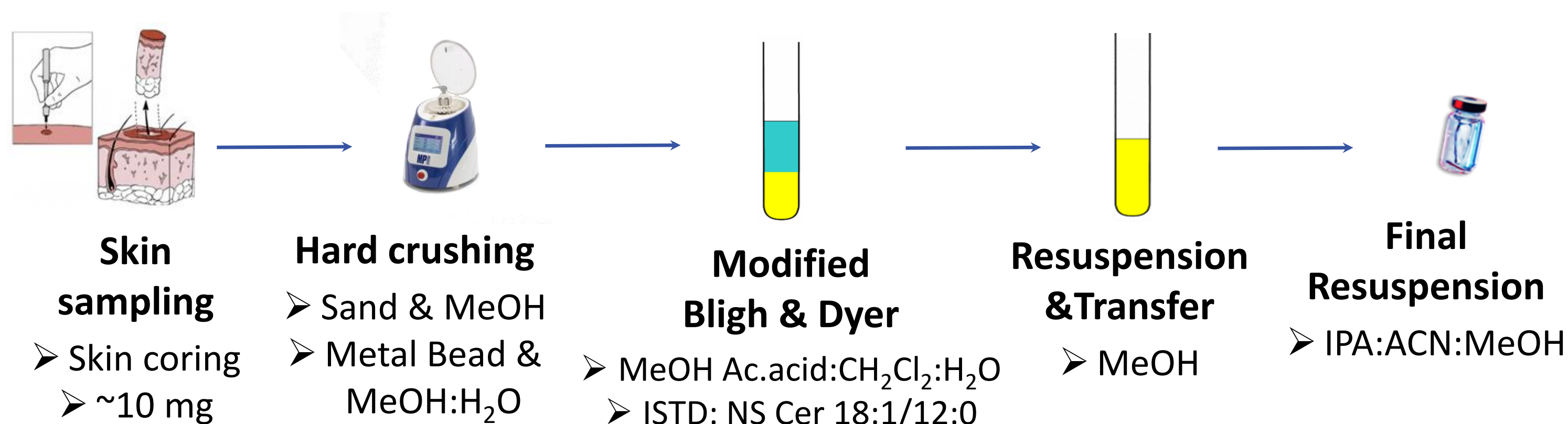


## Ceramides structures<sup>1,2</sup>



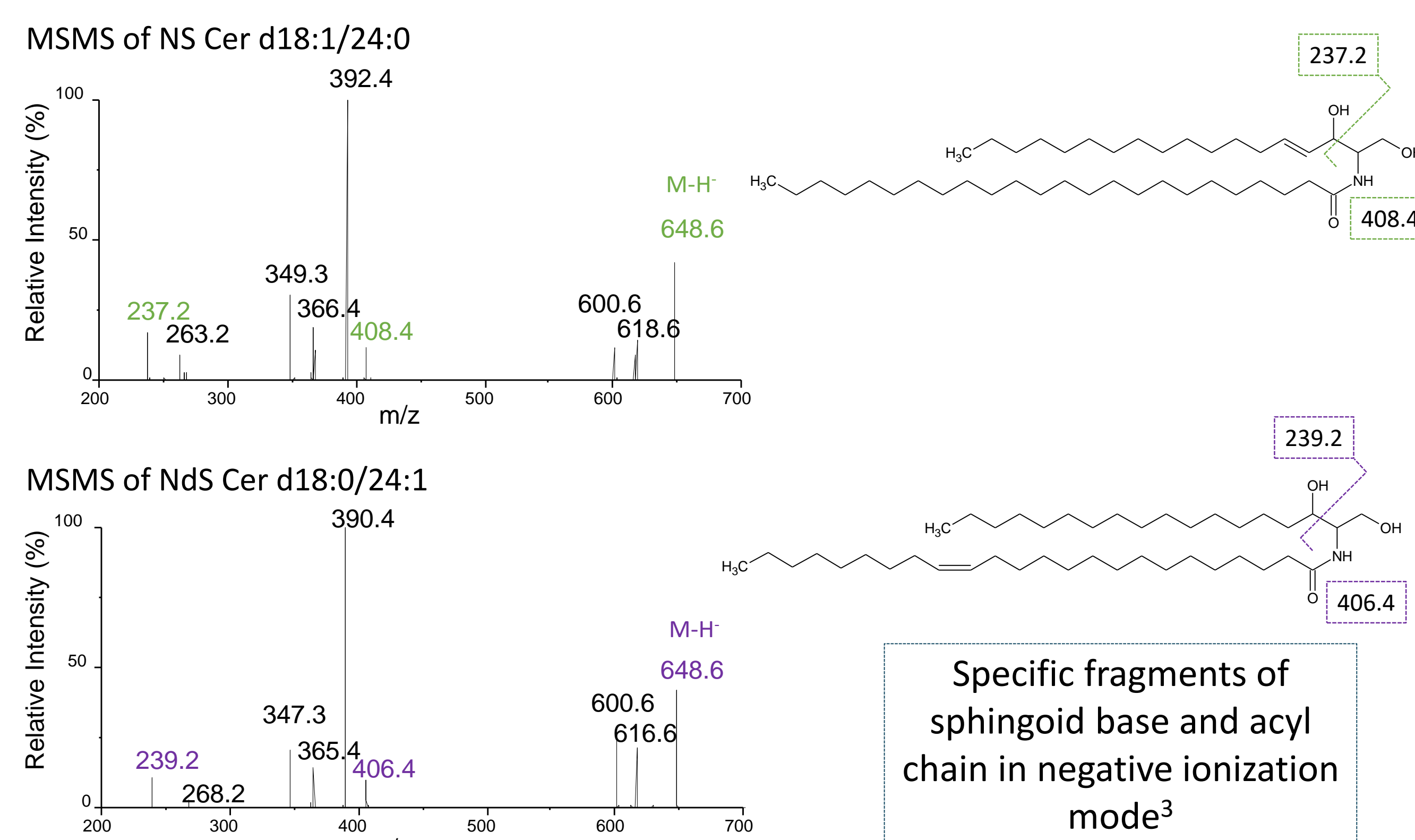
⇒ Huge and complex diversity of skin ceramides

## Skin ceramides extraction



## Ceramides characterization

⇒ NS vs NdS : same formulas but different structures



⇒ Structures validated for all sub families of skin ceramides

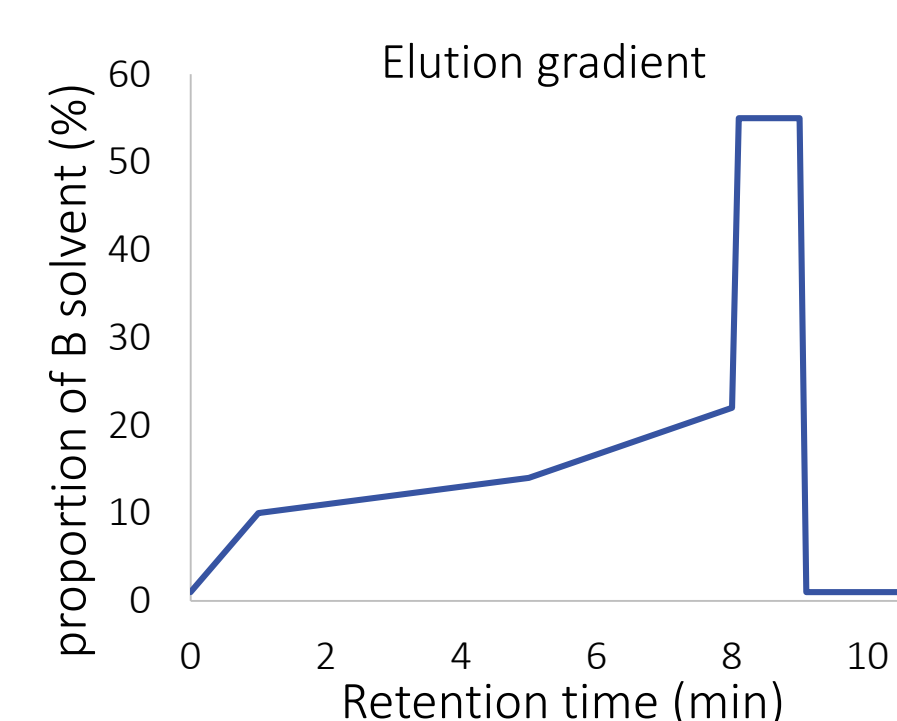
## SFC-QTOF analysis

✓ Optimized SFC-MS conditions

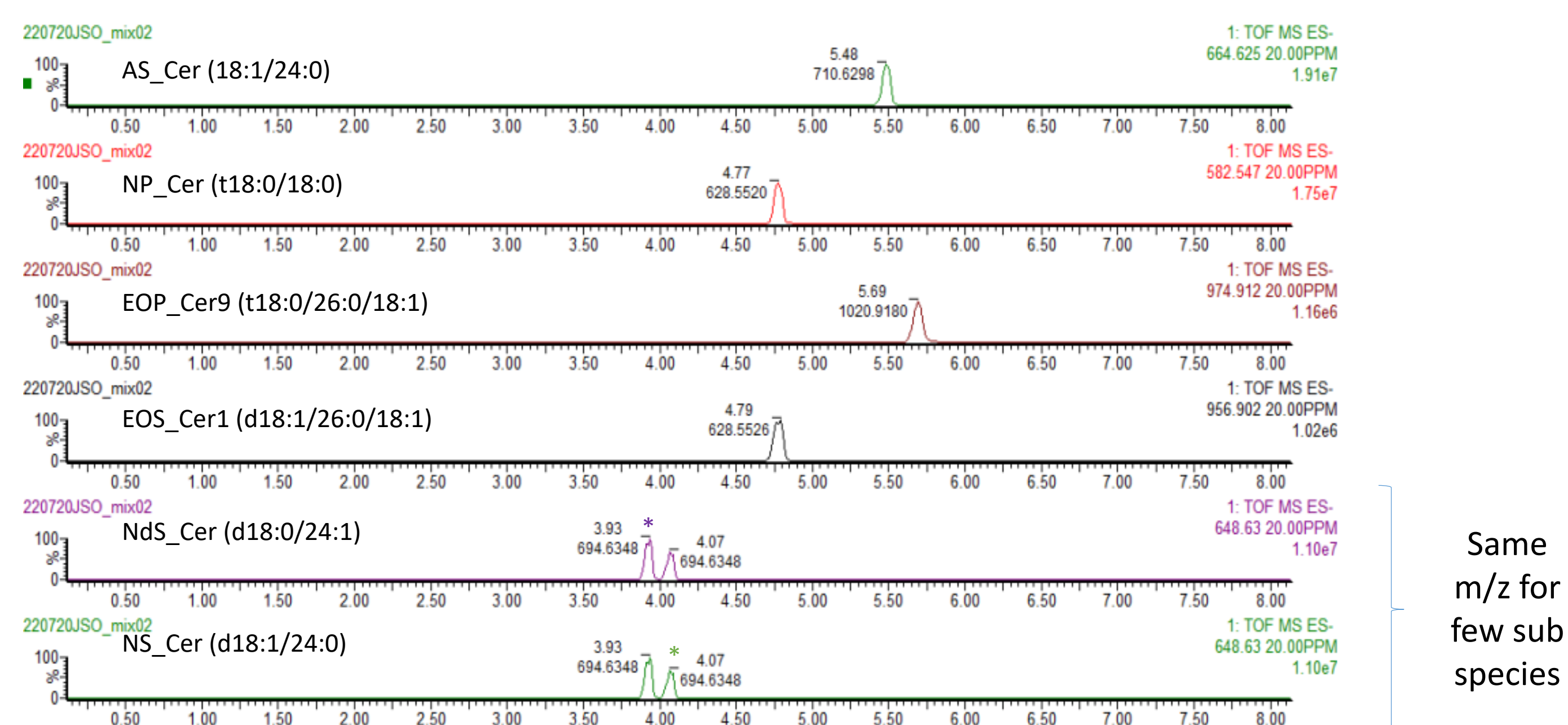
- Column:** Torus DIOL, 100 x 3 mm, 1.7 μm; Waters
- A solvent:** SCCO<sub>2</sub>
- B solvent:** IPA:ACN (50:50); 40% MeOH; 1% FA
- Flow rate:** 1.1 mL/min
- ISM:** Methanol at 0.1 mL/min
- ESI:** Negative ionization mode



⇒ Ceramides separation by polar head in 8 min



✓ Example of separation of commercial standard solution

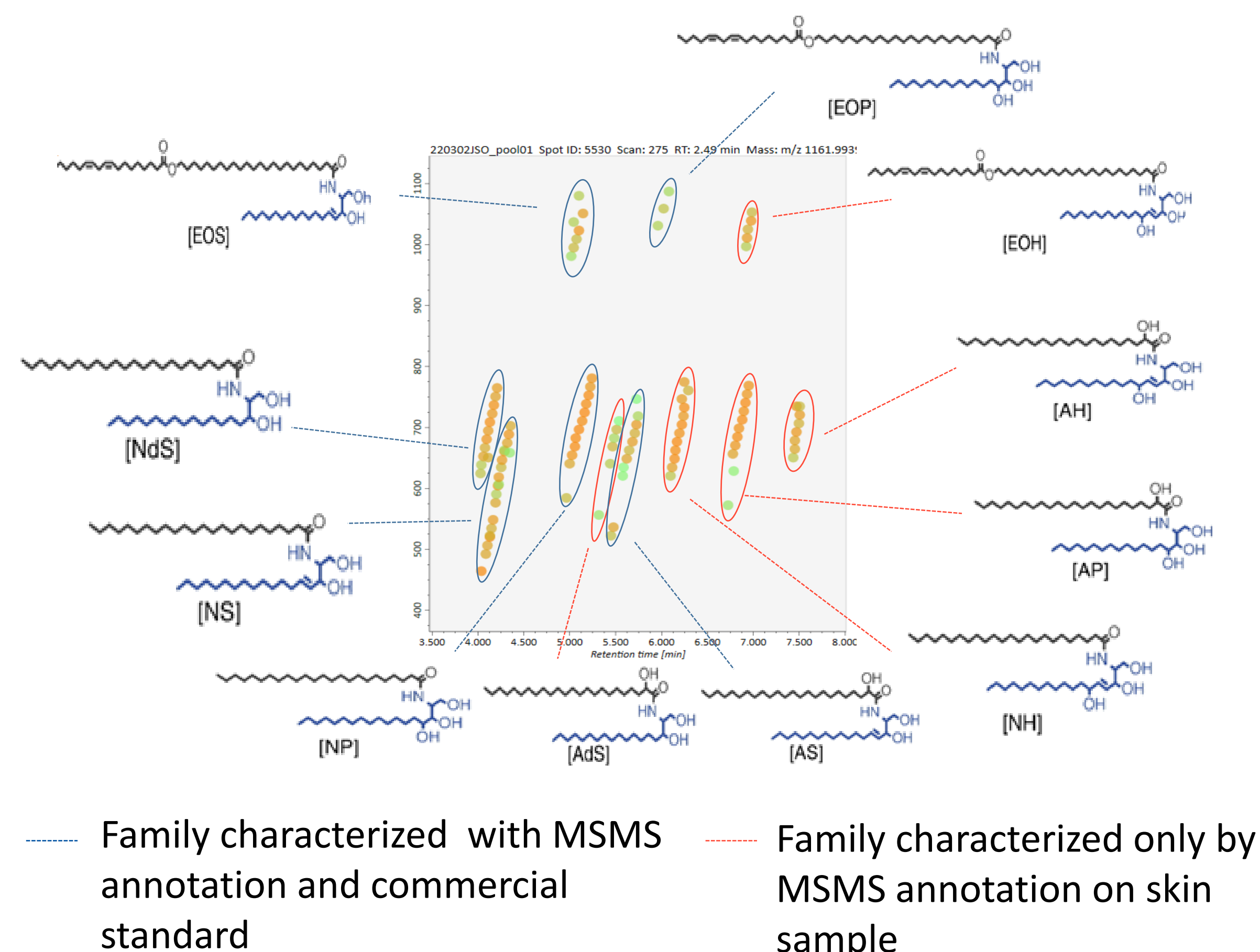


Same m/z for few sub species

⇒ Confirmation of the annotation using MS/MS spectra

## Data Processing

1. Creation of in-house database containing 280 species divided in 11 subclasses of ceramides
  2. MS Dial data processing : optimization of integration parameters
- ⇒ 2D visualization of results obtained on skin samples



## Conclusion & outlook

- ✓ Optimization and validation of skin ceramides extraction
- ✓ Development of a specific and robust method for skin ceramides quantitative profiling using supercritical fluid chromatography coupled to high resolution mass spectrometry

⇒ Application to biological sample in aging context: ongoing analysis

## References

- [1] Smeden et al, Biochimica et Biophysica Acta, 2014 (<https://doi.org/10.1016/j.bbalip.2013.10.002>)
- [2] Smeden et al, Biochimica et Biophysica Acta, 2014 (<http://dx.doi.org/10.1016/j.bbalip.2013.11.006>)
- [3] Jamin et al, EJMS, 2018 (DOI: 10.1177/14699066718815380)

## Acknowledgments

Région Occitanie  
 Pierre Fabre Dermo cosmétique

