

University of Groningen

## Mastering data pre-processing for accurate quantitative molecular profiling with liquid chromatography coupled to mass spectrometry

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# Stellingen

(Propositions)

For to the thesis titled

## **“Mastering data pre-processing for accurate quantitative molecular profiling with liquid chromatography coupled to mass spectrometry”**

- While monotonic shifts can be corrected, orthogonality can only be assessed. [This thesis]
- It is important to note that an accurate correction function cannot be derived if one or more of alignment conditions are not met. [This thesis]
- Peak elution order changes of common compounds not only limit accurate retention time alignment of LC-MS data, but present a major obstacle for accurate mass and time tag approach (AMT) to match peaks in two single-stage LC-MS chromatograms using retention time and m/z information. [This thesis]
- Fragmentation and annotation rates have been increased with the recent introduction of high-resolution MS instruments, but the average identification rate of peptide features in complex datasets still remain below 30%. [This thesis]
- Experimental design is the most efficient way to identify which pre-analytical factors effect's measurement of peptides in complex biological samples. [This thesis]
- Mathematical reasoning may be regarded rather schematically as the exercise of a combination of two facilities, which we may call intuition and ingenuity. [Alan Turing]
- We have the duty of formulating, of summarizing, and of communicating our conclusions, in intelligible form, in recognition of the right of other free minds to utilize them in making their own decisions. [Ronald Fisher]
- Nature uses only the longest threads to weave her patterns, so each small piece of her fabric reveals the organization of the entire tapestry. [Richard Feynman]
- An approximate answer to the right problem is worth a good deal more than an exact answer to an approximate problem. [John Tukey]
- Absence of evidence is not evidence of absence. [Carl Sagan]
- If! If! You can get any conditional construct 'round anything with 'if'. [Paraphrasing Hergé from King Ottokar's Sceptre]
- Always pass on what you have learned. [Yoda]

*Vikram Mitra*

*London, 24-04-2017*