- General points to consider during the planning phase or before the project is started -

Materials

- suitability of consumables like blood collection tubes, tips, cryovails,… (chemical resistance, contaminations, plasticizers, etc.)
- blood collection tubes and other consumables in multi-center studies:
    - same brand and type at all participating sites, i.e. material, additive(s), etc.
    - harmonization of sample labeling for all participating sites
    - if different brands are unavoidable all sample collectors, tubes, … should be tested (chemical noise in mass spec analysis, e.g. by plasticizers, etc)
- adhesive properties of tube labels: do they withstand all storage conditions (e.g. -196°C of liquid nitrogen)?

Body fluid collection and preparation

- ***items that must be determined before collecting blood samples*** *(and being identical at all sites in multicenter studies):*
- patient position
- needle gauge
- sample type (plasma or serum? Which additive?)
- collected blood volume
- number and volume of aliquots for long-term storage at -80°C or below by the subsequent analytical needs (e.g. also for measurements of common routine parameters and other -omics analyses)
- uniform sample labeling

- collection procedure:

standardization of e.g. tourniquet application time, site of venipuncture, collection order for different tubes, sample mixing, …

- sample handling and transportation/ centrifugation conditions for blood / post-centrifugation period / thawing of stored samples / occurrence of deviations from the SOP or protocol

➔ *see templates of lipidomics sampling protocols as downloads on the ILS preanalytics interest group website*

Storage of lipidomics data

- define precisely data storage architecture (e.g. file and sample name), access privileges, and data back-up

Study participants

- instruction for participant:

- must be comprehensible
- consider FAIR publication of (raw) data and include for informed consent https://www.go-fair.org/fair-principles/

- study questionnaire:

- anthropometric data
- stress before sample collection
- unaccustomed situations the day before sample collection (extreme exercise, food excess,…)
- xenobiotics, dietary supplements, drugs
- special diets (e.g. Atkins diet, vegan, …)
- food or special food the day or evening before specimen collection
- life style factors (e.g. alcohol consumption per day or week, cigarettes per day,…)

- standardization of participant conditions

- fasting period (≥ 12h)
- resting period (no unaccustomed or strenuous physical activity 48h before collection)
- day time for sample collection (ideally between 7 and 10 am)
- verify correct participant/patient preparation and document deviations

- health state check of control groups:

- simple clinical chemical test, e.g. CRP, creatinine, etc. (record of results)