

MALDI-UP – the MALDI-TOF MS User Platform

Exchange of spectra to support diagnostics

Jörg Rau¹, Pat Schreiter¹, Tobias Eisenberg², Ekkehard Hiller¹
Joerg.Rau@cvuas.bwl.de / MALDI-UP@ua-bw.de

¹ Chemisches und Veterinäruntersuchungsamt Stuttgart (CVUAS), Schaflandstraße 3/2, 70736 Fellbach, Germany
² Landesbetrieb Hessisches Landeslabor (LHL), Schubertstr. 60, 35392 Gießen, Germany



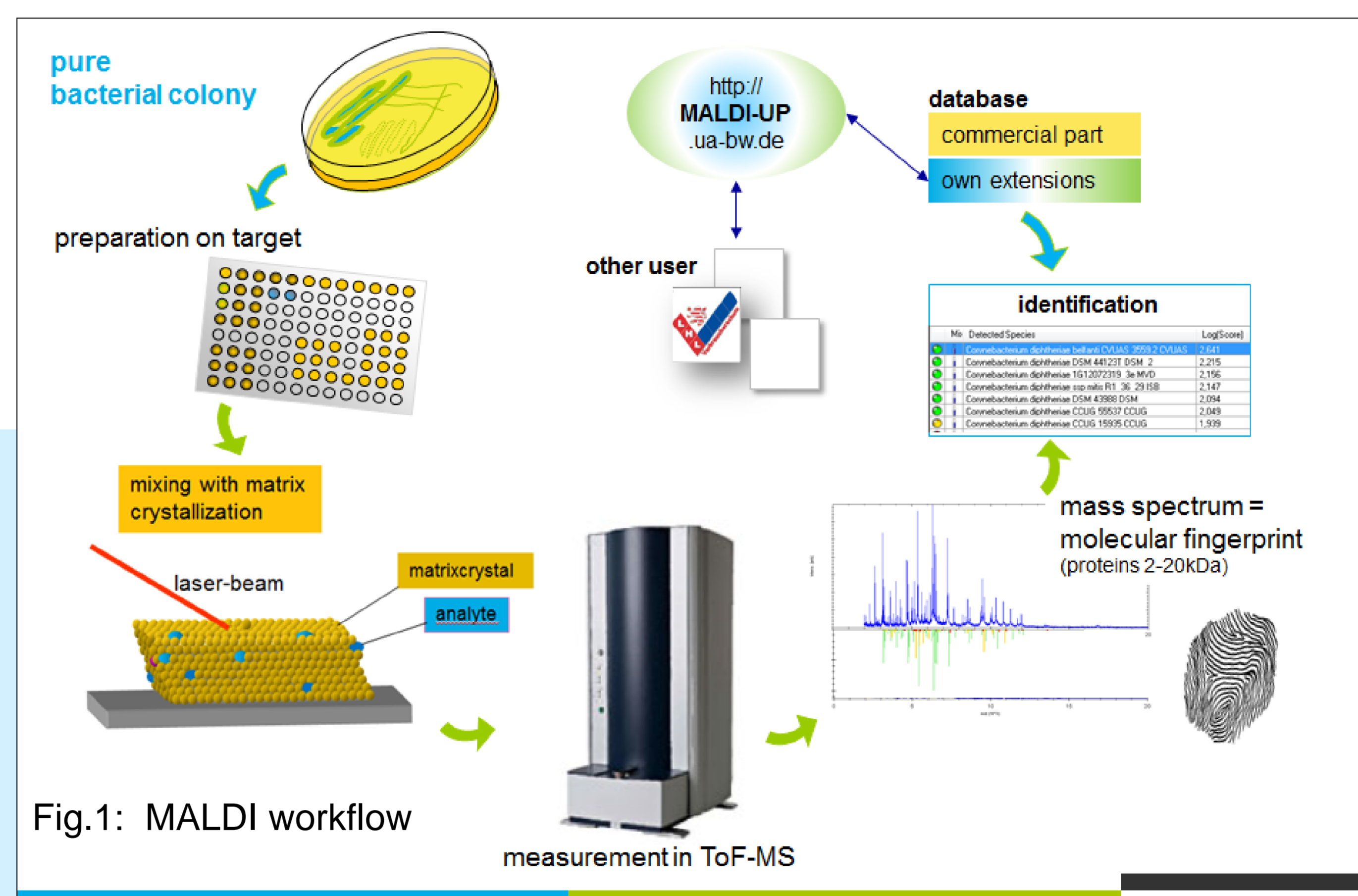
Introduction

MALDI-TOF mass spectrometry (MALDI-TOF MS) for identification and differentiation is spreading rapidly in many application areas within food control, veterinary diagnostics, and clinical microbiology. It has simplified the workflow and significantly reduced the time required from analysis to results. MALDI-TOF MS combines a matrix-assisted laser desorption/ionization (MALDI) with a time of flight (TOF) analyzer and mass spectrometry (MS). Hereby, ionizable large biopolymers, such as proteins from microorganisms, can be analyzed gently.

The identification of an unknown sample is achieved by comparing the resulting mass spectrum with the references in a database (DB). Thus, this database is the key for identification. The systems employed by most users normally offer comprehensive databases supplied by the manufacturer, but they also allow the generation of user's own spectral database entries. These entries can readily be transferred within the same device platform, making it possible to quickly fill up current diagnostic gaps (Fig.1).

MALDI-User Platform

MALDI-UP was designed to provide specific information about spectra that were created by users and can be shared with other users [1].



The MALDI-UP list is open to users, interested in the mutual exchange of information on valuable MALDI-TOF MS on a cost-free basis.

Goal

Exchange of own MALDI (reference) spectra for extension of in-house databases using the non-commercial MALDI-UP catalogue to:

- fill up gaps in the commercial DBs
- expand application areas
- be independent of manufacturer's DBs
- open to any further MALDI user and theme

Currently, entries from 13 institutions



Major Points

- Cost-free
- Easy to use (download excel-catalogue)
- Monthly updated / Newsletter on RG
- User guide is available [2]

Find comprehensive information about:

- species names, isolate numbers, sources, details on the validity of the isolate designation
- technical details of the entries (instrument, cultivation, preparation etc.)
- contact information about creator of entries

but no free download of spectra or MSPs

<http://MALDI-UP.ua-bw.de>

Database Extension

Close your gaps – expand the use of your MALDI-TOF MS

- Σ > 1100 reference entries, thereof
- > 410 bacteria
 - > 80 molds/fungi
 - > 470 animal (meat, fish, insects)
 - > 120 food-products (milk, plants)
 - ~ 12 parasites

Validation-Spectra

used for species-specific and comprehensive quality-assurance of the individual onsite database [3].

- Σ > 2200 individual single spectra, thereof
- > 1050 bacteria
 - > 900 meat
 - > 200 milk-products

[1] MALDI-TOF MS User Platform. <http://maldi-up.ua-bw.de>
[2] Rau et al. (2016a), *Aspects of Food Control and Animal Health* 2016, 1.
[3] Rau et al. (2016b), *Aspects of Food Control and Animal Health* 2016, 3.

