BioColour is a new project funded by the Strategic Research Council at the Academy of Finland, which aims to advance the use of natural colorants in applications. Past traditions have saved knowledge and skills about natural dyes and coloration methods. Therefore, the BioColour project wishes co-operation with the researchers of history, archaeology and conservation science to understand more deeply the effect of time on the properties of natural dyes and interactions between material and a dye. Further, by collecting the information in an open database we aim to support those dealing with natural colourants, their research and applications.
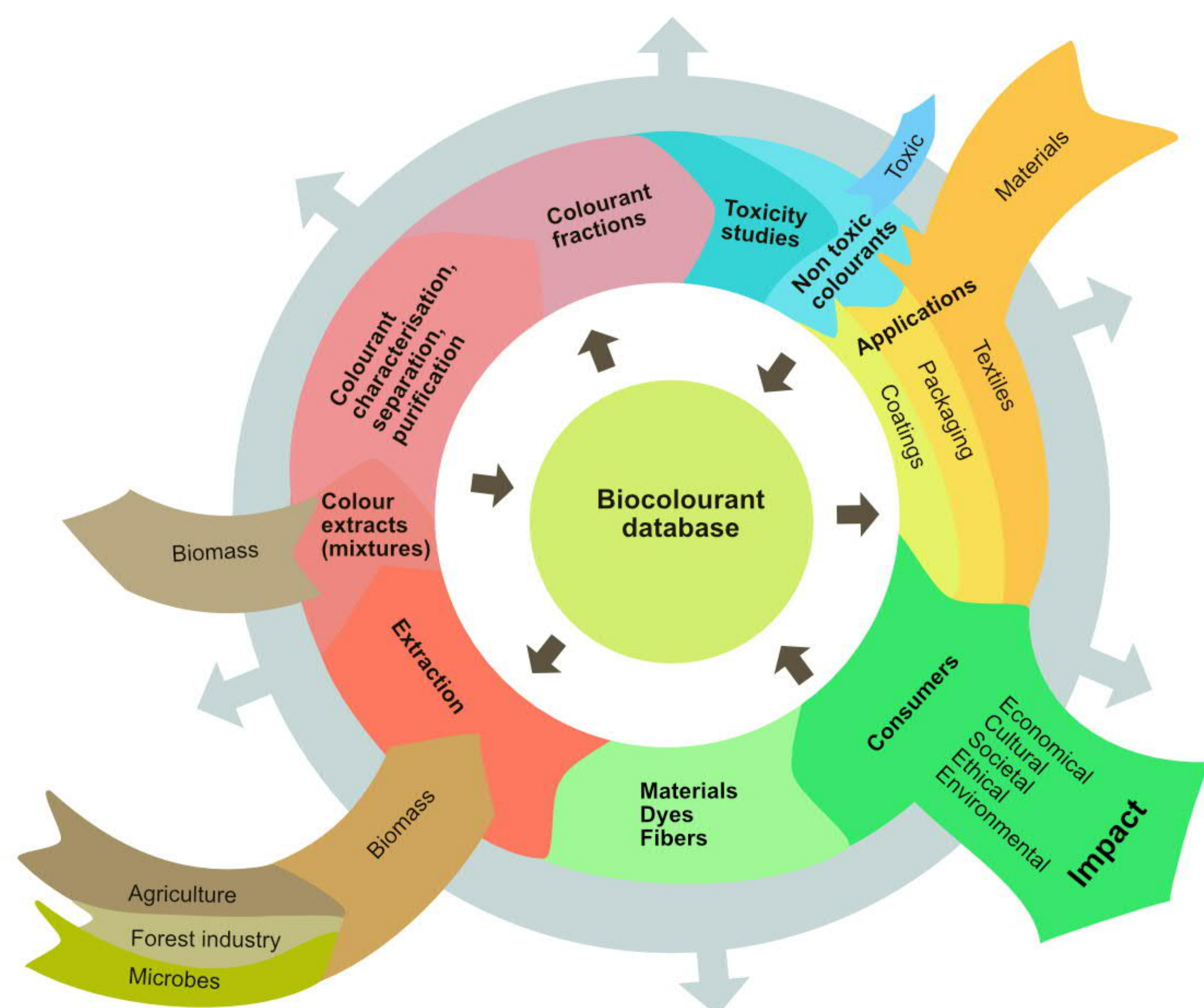

BioColour
Bio-based Dyes and Pigments for Colour Palette – Combining Traditions with Innovations

New biocolourant database

We want to add awareness about the qualities of natural dyes, their potential and sustainable use, bring knowledge to protect the dye production field from fraudulent actions and enhance the responsible development of their usage. We will provide information for characterization, authentication, quality and safety analyses of dye source materials, biocolourants and natural dyed products. Using multidisciplinary approach and knowledge from taxonomy, botany, chemistry, genetics and bioactivity, deeper understanding of the phenomena will be achieved. In the database the information will be in various forms such as photographs, distribution maps, texts and spectral and numerical data.

Chemical fingerprinting

The focus will be on the characterization of the dye source materials and biocolourants, with the emphasis on detailed chemical profiles, i.e. HPLC-DAD-MS/MS fingerprints of plant and fungal dye sources combined with taxonomical and botanical information to provide reference data of authentic samples. Qualitative and quantitative information about colour molecules and other compounds characteristic to the dye source species used will be included. Chemical fingerprint data will be linked to the spectral imaging data, which we will produce in the BioColour project.
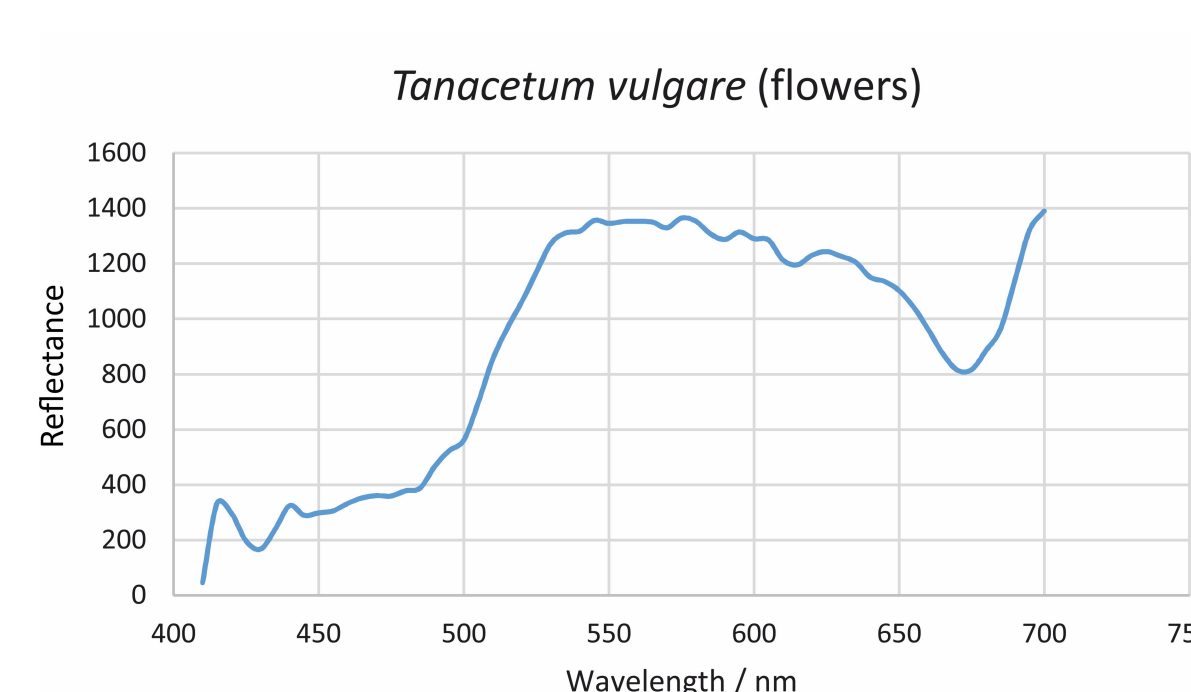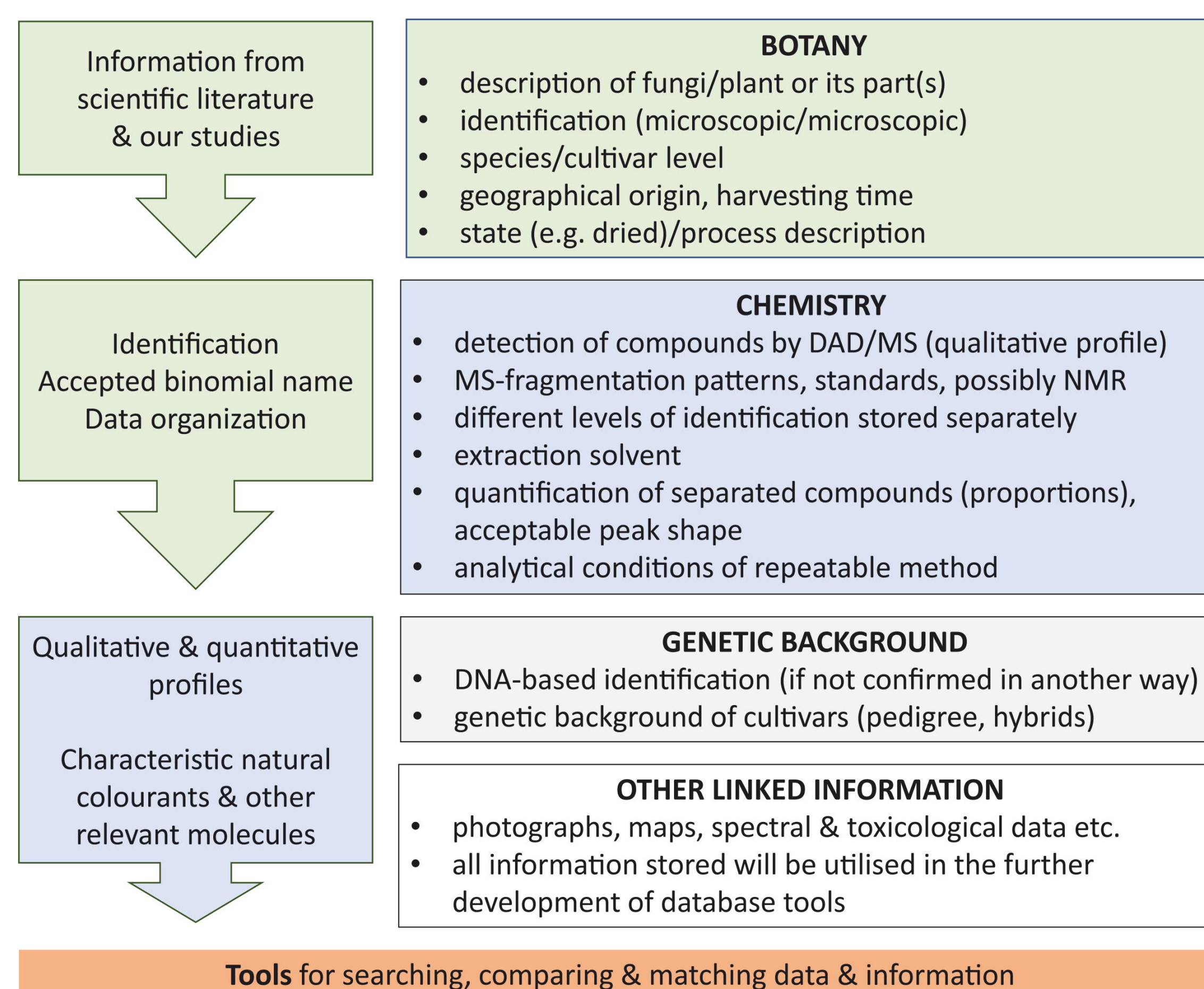
Characterization of dyes from the past and today

The co-operation will be done with the data scientists in order to develop user-friendly tools to find relevant information in database. Authentic fingerprints can be used for comparison with the characteristics of a sample in question, i.e. the user's sample, for example obtained of an ancient natural dyed textile. A match between the samples is the key to an identification of the dye source.

The dye sources will include the genera of historically important natural dye sources such as common and less common species or cultivars from the genera Isatis, Indigofera and Rubia but also those of less known with good dyeing potential.

Biocolour.fi

The BioColour consortium combines scientists from the University of Helsinki, University of Eastern Finland, Aalto University, Häme University of Applied Sciences, Luke Natural Resources Institute of Finland, VTT Technical Research Centre of Finland Ltd, North Carolina State University, USA and University of Campinas, Brazil.

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