BASIC INFORMATION ON SUB-PROJECT

NAME OF PROGRAMME/FUND	Scholarship Fund - Sciex NMS^{ch}
RESEARCH FIELD AND OTHER RESEARCH FIELDS INVOLVED (if applicable)	Environmental Sciences, Basic Biological Research
TITLE OF THE SUB-PROJECT	Bioprospecting and selection of algae for high value products (BIOSAP)
REGION OF THE CZECH REPUBLIC (according to the location of the home institution)	Prague
GRANT AMOUNT SPENT	50 879,85 CHF
INTERMEDIATE BODY	Swissuniversities
HOME INSTITUTION	Institute of Botany, Academy of Sciences of the Czech Republic, Department of Plant Ecology
HOST INSTITUTION	ZHAW, Life Sciences and Facility Management
NAME OF THE FELLOW	Pavel Přibyl

ABSTRACT OF THE SUB-PROJECT	Algae and cyanobacteria are capable of naturally synthesising a variety of metabolites, some of which have the potential to be used as bioactive compounds in human or veterinary medicine, cosmetics, food or animal feed. Many of these organisms, however, have not yet been tested as to their feasibility to produce a variety of valuable metabolites in biotechnological manufacturing systems. Microalgae combine the advantages of rapid growth with the inherent ability to produce essential metabolites found in plants to a standardised quality. Unlike cultivated plants, microalgae cultures grown in indoor, well-controlled bioreactors are unaffected by the season, geographical location or soil quality. The major obstacles, however, hindering any broad exploitation of the benefits of algae cultivation are both the biological and technical limitations occurring in large industrial-scale manufacturing. One strategy to overcome the resulting economic barriers is the selection of appropriate freshwater strains that produce high value compounds in sufficient quantity and purity under conditions of heterotrophic growth in conventional stirred stainless steel bioreactors. Hence, the primary deliverable of the experimental programme will be the identification and characterisation of strains suitable for the large-scale production of high value compounds of the algal fat metabolism, such as glycosidic steroids, free fatty acids or phospholipids. For these products algae biomass would be a sustainable and safe resource as an alternative to the current method of their isolation from natural animal or plant sources, e.g. saltwater fish. Subsequently, axenic (i.e. noncontaminated) algae cultures will be generated using advanced techniques as fluorescence-activated cell sorting (FACS). Finally, the environmental conditions for heterotrophic optimum biomass growth as well as for high and reproducible product formation will be determined. This initial collaborative project will result into (1) selection and characterisation of feasible production organisms, (2) a joint scientific publication and (3) preparation of a bilateral project proposal.
DATE OF REALISATION OF THE FELLOWSHIP	1.3.2012 - 31.8.2012

MORE INFORMATION ON THE PROGRAMME	**www.sciex.ch**