**HORIZON 2020 PARTNER SEARCH**

**CONTACT INFORMATION**

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| Organisation name (English) | State Priekuli Plant Breeding Institute |
| Organisation name (Latvian) | Valsts Priekuļu laukaugu selekcijas institūts |
| Organisation acronym (English) | SPPBI |
| Organisation acronym (Latvian) | VPLSI |
| Organisation address | 1a, Zinatnes street, Priekuli, Latvia, LV-4126 |
| Organisation website | http://www.priekuliselekcija.lv |
| Type of organisation | Research institute |
| Department/Unit/Laboratory | Department Research |
| Contact person (incl. Title) | Ilze Skrabule, Dr.agr. |
| Position (function) | Leading researcher |
| Telephone number | +371 64130162 |
| Fax number | +371 64107217 |
| E-mail address | Ilze.Skrabule@priekuliselekcija.lv |
| Director of the Institute | Arta Kronberga, Dr.agr. |
| E-mail address | Arta.Kronberga@priekuliselekcija.lv |

**DESCRIPTION OF RESEARCH INSTITUTION AND ITS EXPERIENCE**

SPPBI was established more than 100 years ago (1913) and since beginning main research areas have been crop breeding and seed production as well as research on different cropping systems. Currently SPPBI has become one of the leading and most experienced Latvian research institutions in agricultural science.

**The main research directions of SPPBI**

* Development of methods for environmentally friendly crop breeding, including breeding for organic farming.
* Improvement of seed production technologies.
* Maintenance, research and description of Latvian crop genetic resources.
* Crop management and soil research.
* Quality and nutrition value of initial material for food and feed production.

**Previous experience in research projects**

* EU 7 Framework Programme Project EUROLEGUME “Enhancing of legume growing through sustainable cropping for protein supply for food and feed” 2014-2017. Nr 613781.
* EU 7 Framework Programme ERA-NET, Core – Organic programme project PRODIVA “Crop diversification and weeds”, 2015-2018.
* EU 7 Framework Programme ERA-NET, Core – Organic programme project COBRA “Coordinating Organic plant Breeding Activities for Diversity”, 2013-2015.
* ESF co-financed project „Development, improvement and implementation of environmentally friendly and sustainable crop breeding Technologies” agreement Nr. 2009 / 0218 / 1DP / 1.1.1.2.0/09/APIA/VIAA/099, 2009-2012.
* INTERREG, ESTLAT programme EU 38846 BALTORGPOTATO “Baltic organic potato for world market”, 2011-2013.
* EEA grant NR. EEZ08AP-27 „Development of crop breeding strategy for organic farming” 2009-2010.
* EU programme INTERREG ‘East East: Partnership Beyond Borders Program Best practices in using countries potential for producing and marketing organic products in Central and Eastern Europe’. 2008.
* NordPlus Framework Programme ‘Genomics for all: bringing new tools to breeders’ involved 4 researchers. 2007-2008.
* INTERREG IIIC Clean Region “Regional Collaboration for Minimising Pesticide emissions in the environment”. 2005-2007.
* EU 6.Framework Program/ SSA/ CHANNEL PROJECT “Opening Channels of Communication between the Associated Candidate Countries and the EU in Ecological Farming” 2004 – 2006.
* COST 860 SUSVAR Sustainable low-input cereal production: required varietal characteristics and crop diversity. 2007-2009.
* COST FA0604 TRITIGEN: ‘Triticeace genomics for the advancement of essential European crops’. 2007-2009.

**SCIENTIFIC INTERESTS (CALL, TOPIC)**

***I Strategies for crop productivity, stability and quality SFS-05-2015***

* **Crop breeding for environmentally friendly farming** (potato, barley, triticale, rye, pea). Potato - early and fast plant development, tuber bulking. All crops - yield stability assessment, methodology for assessment of nutrient use efficiency. Cereals - study on plant traits related to competitive ability with weeds.
* **Study on genotype mixtures and composite cross populations** (spring barley): advantages in organic/conventional farming, use possibilities, principles of choosing initial material etc.
* **Providing acceptable quality of initial material for food and feed production.** Potato genotypes with preferable level of important for human health substances in tubers (vitamins C, B, karotinoids, anthocyanins, glycoalkaloids, amino acids, phenols). Diversity in cereal genotypes of phenolic compounds, anthocyanins, tocopherols and tocotrienols in barley. Influence of **growing conditions** (organic farming or conventional) on formation of those substances.

**Key words**: breeding methods, breeding for organic farming, genotype mixtures, CCP, substances important for human health.

***II Management and sustainable use of genetic resources SFS-07b-2015***

* Searching for variability of **specific health related compounds** by screening of wide spectrum of genetic resources in several crops (triticale, barley including hulless barley, potato etc.), several locations and various management practices (including organic). Attention has to be paid on old varieties and gene bank accessions since it is reported that newer varieties are often missing some valuable compounds. *(cooperation with gene banks*). For example - vitamins C, B, carotenoids, anthocyanins, glycoalkaloids, amino acids, phenols – in potatoes, phenolic compounds, anthocyanins, tocopherols and tocotrienols in barley, and in triticale.
* One of major emphasizes on cancer preventative and anti-inflammatory peptide **lunasin** which was discovered in noticeably higher amounts in triticale. Significantly higher concentration in barley was found under organic farming if compared to conventional farming.
* Elaboration of **NIR calibrations** for rapid and cost effective screening of large amounts of samples*. Can be used also as a tool in breeding afterwards.*
* Genotype and environment effects and heritability has to be determined and possibilities to do breeding for improvement of varieties evaluated. *Information on valuable initial material will be available for breeders.*
* Pre-breeding strategies for selection of genotypes with preferable content of important compounds.
* Promote usage of triticale in food products. Development of some new food products from triticale (and maybe also hulless barley) could be included. *Cooperation with food producers.*

**Key words**: substances important for human health, lunasin, GxE, pre-breeding strategies, NIR technologies.