The Breeding Application Programming Interface (BrAPI). BrAPI is a standardized web service Application Programing Interface (API) specification. Focus of BrAPI is on providing services for connecting systems and retrieving basic breeding data including germplasm, study, observation, and marker data. A number of BrAPI-enabled applications, termed BrAPPs, have been written (https://brapi.org/brapps.php).

Banana Breeding is a long and tedious process which involves various activities such as germplasm conservation, field selection and lab tissue culture. The largest publicly available genetic resources for banana are found at the the KU Leuven genebank and its related online website, MGIS (https://www.crop-diversity.org/mgis/) is actively used by breeders from South hemisphere to perform crosses and improve current varieties for smallholder farmers. Banana biology is complex, it is an allopolyploid (multiple copies of two genomes A (Musa acuminata) and B (Musa bamisiana), meaning that each plant can carry two (diploid), three (triploid) or four (tetraploid) copies of one or two of these genomes (AA, AB, AAB or AAAB for example). This complexity require a careful tracking and characterization of each plant.

The Mueller lab develop and maintain a breeding database for Bananas, musabase (https://musabase.org/)and it related test site (https://musabase-test.sgn.cornell.edu) . The musabase database aims at supporting breeder effort in creating new improved varieties. Developpingthe existing communication between Musabase and MGIS databases would help breeders to:

-1- Access information of both websites from a unique interface

-2- Compare information between MGIS and Musabase to assess data information quality at various level:

-a- Germplasm data information (accession names).

-b- Phenotypic information (compare the phenotypic data (i.e.: fruit color) collected from both Musabase and MGIS sides using the trait ontology).

-c- Genotypic information (compare genotypic data (molecular markers) collected from both Musabase and MGIS sides

-3- Report information found on both side to create a data comparison interface

To develop such a data comparison tool for banana, the intern could use the current BrAPI interface based between musabase (https://musabase-test.sgn.cornell.edu/brapihome/) and MGIS (https://www.crop-diversity.org/mgis/brapi/query). A test use case would involve ploidy level and germplasm group checking across databases.