Florilege, a database gathering microbial habitats, phenotypes and uses
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Florilege, a database gathering microbial habitats, phenotypes and uses

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Context

Food microbiology research has led to an exponential growth of experimental data and publications. It is now crucial for researchers to have bioinformatics applications that offer unified access to both data and related scientific articles.

Florilege uses an Information Extraction workflow to populate its database.

The workflow is designed to (1) extract microorganism taxa, their habitats, their phenotypes and their uses and (2) categorize the extracted information by means of taxa from the NCBI taxonomy and concepts from the OntoBiotope ontology\(^5\). The Florilege application combines information from other databases with knowledge from the literature (PubMed) on microbial biodiversity, to support their comparison for further analysis.

\(^5\) Chaix E. et al. Text mining tools for extracting information about microbial biodiversity in food Food Microbiology, 2018.
Florilege database

Genomic and Biological Resource Centers databases

PubMed

GenBank

BacDive

CIRM

Abstracts of scientific publications

Relations extracted by text-mining

Lactobacillus_rhamnosus_HN001
NCBI taxID 486408 *Lactobacillus rhamnosus* str. HN001

Lives in

fermented goat milk

OBT:002065 goat milk

Lactobacillus_rhamnosus

NCBI taxID 47715 *Lactobacillus rhamnosus*

Exhibits

gram-positive

OBT:000649 gram-positive

Lactobacillus_rhamnosus

NCBI taxID 47715 *Lactobacillus rhamnosus*

Studied for

probiotic capacity

EC:0000015 probiotic capacity

30/06/2020 - 03/07/2020 JOBIM 2020 florilege@inrae.fr
Florilege web interface

Florilege, a database gathering microbial habitats, phenotypes and uses

Search relations by habitat: cheese

190 relations for the habitat "cheese"

Source: PubMed
Taxon: Lactobacillus

<table>
<thead>
<tr>
<th>SOURCE TEXT</th>
<th>HABITAT</th>
<th>RELATION TYPE</th>
<th>TAXON</th>
<th>QPS</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6605</td>
<td>cheese</td>
<td>may be inhabited by</td>
<td>Lactobacillus acidipiscis</td>
<td>DSMZ</td>
<td></td>
</tr>
<tr>
<td>11211271, 20538362, 21742864</td>
<td>cheese</td>
<td>may be inhabited by</td>
<td>Lactobacillus acidipiscis</td>
<td>PubMed</td>
<td></td>
</tr>
<tr>
<td>22574688</td>
<td>semi soft cheese</td>
<td>may be inhabited by</td>
<td>Lactobacillus acidipiscis</td>
<td>PubMed</td>
<td></td>
</tr>
<tr>
<td>17357571, 17582095, 21264685</td>
<td>Habitat: cheese Appears in the text as: ovine cheese, Pecorino cheese, petit-suisse cheese, experimental cheese, Minas Frescal cheese, Brazilian goat semi-hard cheese, Egyptian home-made cheese, Fresco cheese environment, probiotic cheese, Scamorza cheese, creamy goat cheese, regular cheese, cheese</td>
<td>may be inhabited by</td>
<td>Lactobacillus acidipiscis, L_acidophilus, Lactobacillus acidophilus</td>
<td>PubMed</td>
<td></td>
</tr>
<tr>
<td>27112363, 24020254</td>
<td>may be inhabited by</td>
<td>Lactobacillus acidophilus</td>
<td>PubMed</td>
<td></td>
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</tr>
<tr>
<td>21943729, 19751954, 22720913</td>
<td>may be inhabited by</td>
<td>Lactobacillus acidophilus</td>
<td>PubMed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Florilege - http://migale.jouy.inrae.fr/florilege/
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Conclusion

Florilege is integrating an increasing volume of textual and non-textual information from relevant biological databases:

➔ **659 508** Taxa - Habitat relations (575 822 PubMed, 63 534 GenBank, 639 INRAE CIRM BIA, 19 513 DSMZ through BacDive<sup>6</sup>)

➔ **43 742** Taxa - Phenotype relations (PubMed)

➔ **10 408** Taxa - Use relations (PubMed)

Florilege offers a powerful semantic search engine that enables ontology-based query to support Information Retrieval.

Access to Florilege:

➔ a web application displays a unique set of structured information on food microbiota, publicly accessible at [http://migale.jouy.inra.fr/florilege/](http://migale.jouy.inra.fr/florilege/).


In a recent study conducted at STLO, Florilege was used for the selection of species fermenting soy milk.

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