

The COMPARE Database: A Comprehensive Public Resource for Allergen Identification and Protein Allergenicity Assessment.

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Introduction

The identification of new allergen sequences has become more complex over the years due to the exponential increase of sequence data that accompanied the broad adoption of high throughput sequencing methods. A contemporary, adaptable, high-throughput process was developed to overcome that challenge.

- Comprehensive, automated annual sequence search across publicly available data
- Transparent process

Methodology

Candidate sequences are reviewed and approved on an annual basis by an independent international panel of academic and clinical allergy experts for inclusion in COMPARE (van Ree et al. 2021).

Results

COMPARE 2022, released 01/26/2022, is the 6th version of the DB and contains 2463 sequences [average # new sequences/yr: 73 unique] www.comparedatabase.org

- Curated description fields by renowned allergy experts
- Efforts to match official IUIS allergen names
- Fragments from a same protein are identified via a "Parent accession" field
- Transparency files at each annual update: <http://db.comparedatabase.org/documentation>
- Includes a built-in screening tool, COMPASS, for amino acid sequence alignment comparisons (Figure 3).

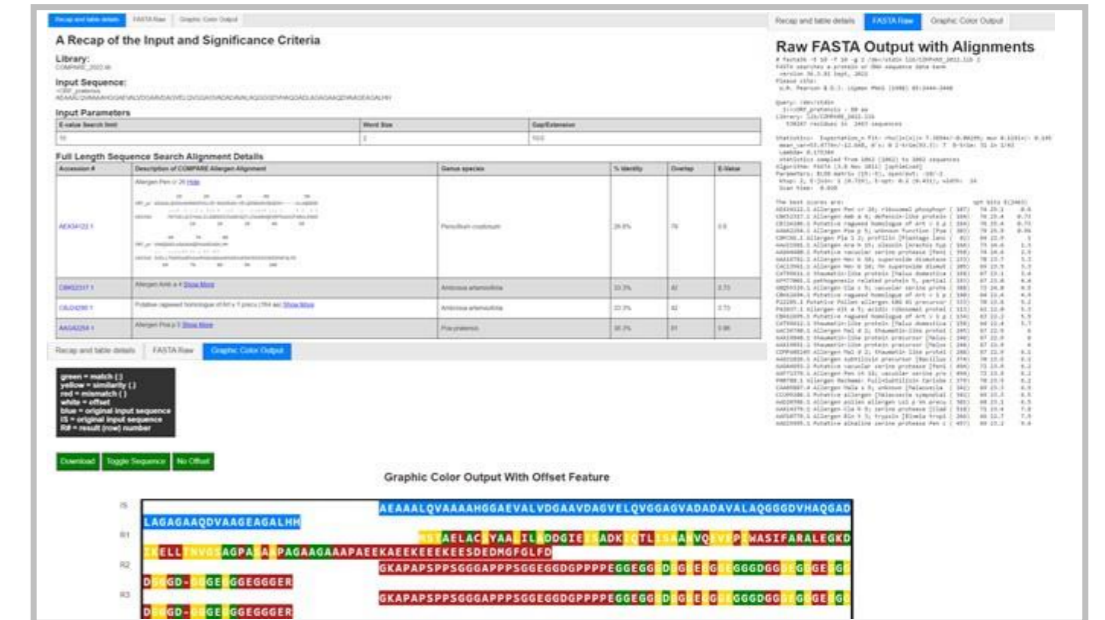


Fig. 3: "COMPASS": Bioinformatics screening tool (3 format outputs)

Conclusions

The COMPARE database and its freely available public resources support the development of innovative food products and technologies.

- Provides up-to-date tools for allergenicity assessment before new products enter the market
- Contributes to better protection of human health and food safety.

References & Further information

van Ree, R., et al., 2021. The COMPARE Database: A Public Resource for Allergen Identification, Adapted for Continuous Improvement. *Frontiers in Allergy*, 2: 39. <https://doi.org/10.3389/falgy.2021.700533>

COMPARE is hosted and managed by HESI (www.hesiglobal.org), a non-profit institution whose mission is to collaboratively identify and help to resolve global health and environmental challenges around risk assessment and safety through the engagement of scientists from academia, government, industry, NGOs, and other strategic partners. **Contact:** compare@hesiglobal.org.

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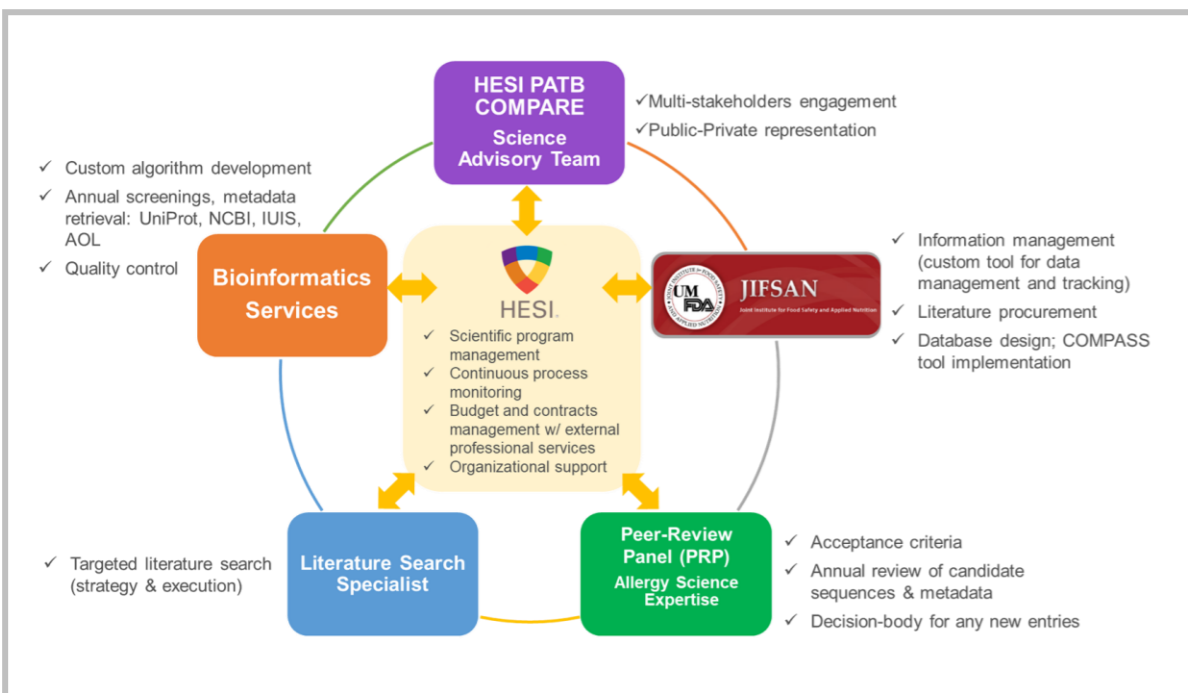


Fig.1: Multi-disciplinary and mutli-stakeholder components of the COMPARE process. Inclusion/Exclusion criteria are described in Table 2 of van Ree et al. 2021.

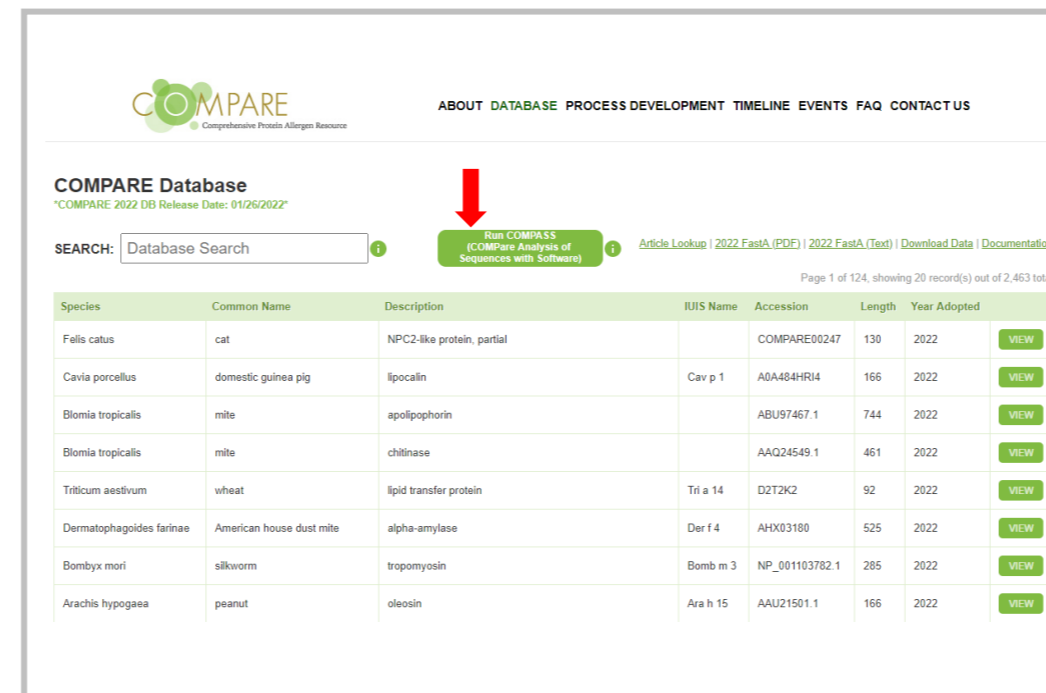


Fig. 2: Database page, main view (<http://db.comparedatabase.org>)