GenEpi Webinar

Antigen Surveillance: from Evolution to Immune

A virtual training workshop within GenEpi-BioTrain.

Pratical exercice on *B. pertussis* vaccine antigens

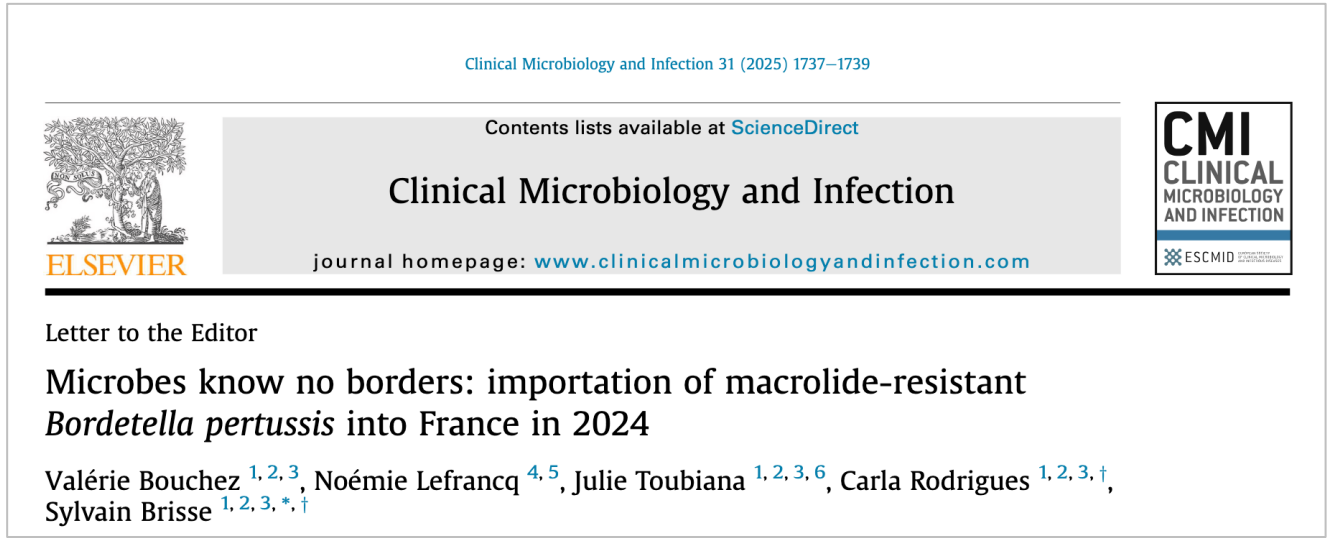
Valérie Bouchez

March 25th 2026

Practical session

Case study (Bouchez-CMI2025-PMID40602497)

public project 81



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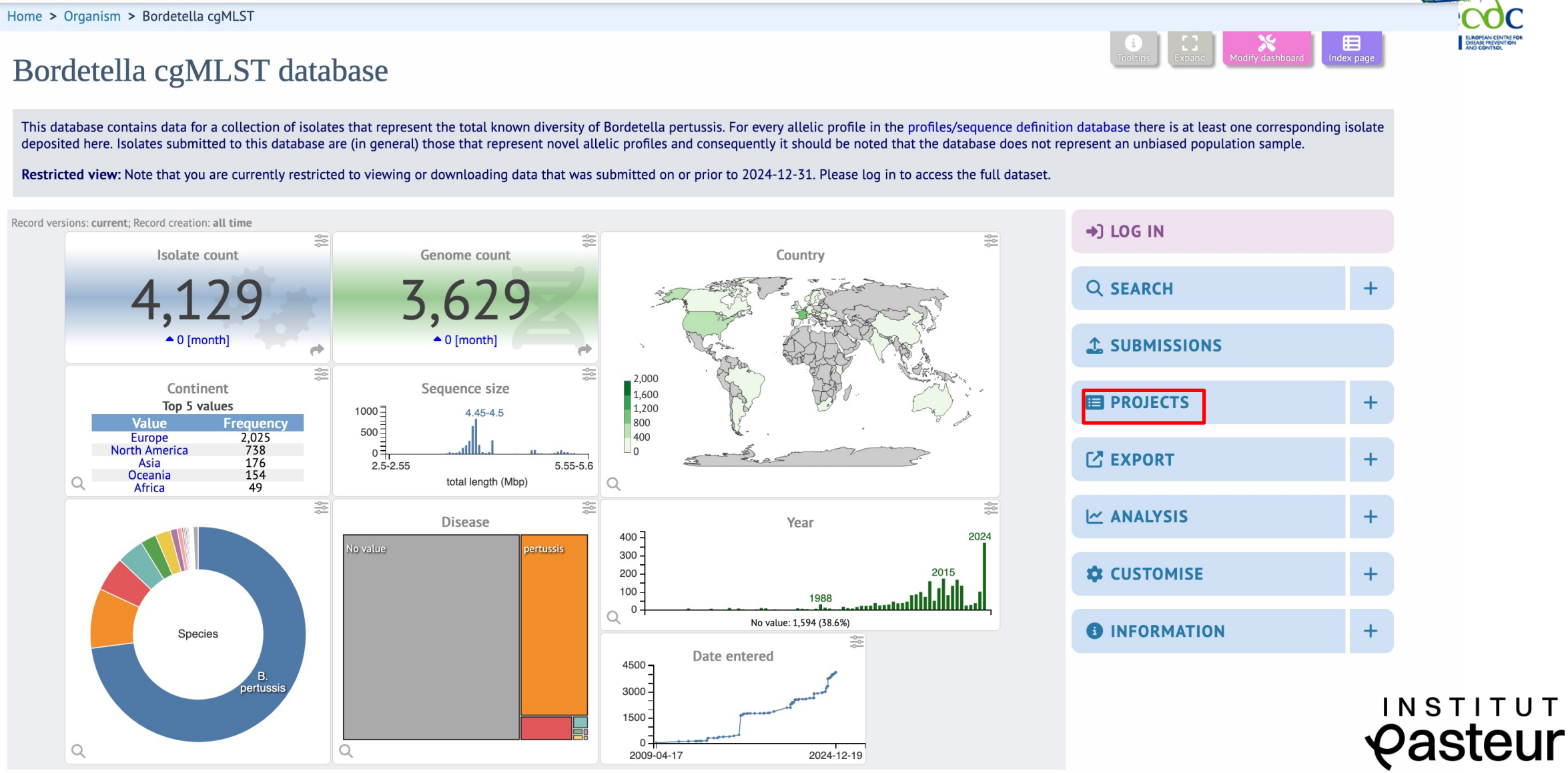

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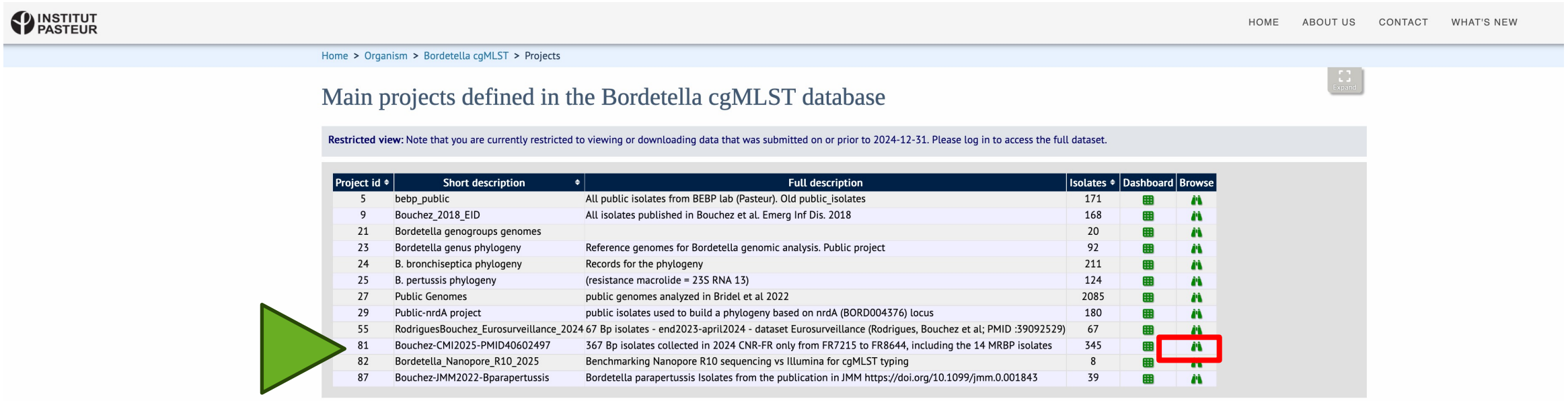

Project id	Short description	Full description	Isolates	Dashboard	Browse
5	bebp_public	All public isolates from BEBP lab (Pasteur). Old public_isolates	171		
9	Bouchez_2018_EID	All isolates published in Bouchez et al. Emerg Inf Dis. 2018	168		
21	Bordetella genogroups genomes		20		
23	Bordetella genus phylogeny	Reference genomes for Bordetella genomic analysis. Public project	92		
24	B. bronchiseptica phylogeny	Records for the phylogeny	211		
25	B. pertussis phylogeny	(resistance macrolide = 23S RNA 13)	124		
27	Public Genomes	public genomes analyzed in Bridel et al 2022	2085		
29	Public-nrdA project	public isolates used to build a phylogeny based on nrdA (BORD004376) locus	180		
55	RodriguesBouchez_Eurosurveillance_2024	67 Bp isolates - end2023-april2024 - dataset Eurosurveillance (Rodrigues, Bouchez et al; PMID :39092529)	67		
81	Bouchez-CMI2025-PMID40602497	367 Bp isolates collected in 2024 CNR-FR only from FR7215 to FR8644, including the 14 MRBP isolates	345		
82	Bordetella_Nanopore_R10_2025	Benchmarking Nanopore R10 sequencing vs Illumina for cgMLST typing	8		
87	Bouchez-JMM2022-Bparapertussis	Bordetella parapertussis Isolates from the publication in JMM https://doi.org/10.1099/jmm.0.001843	39		

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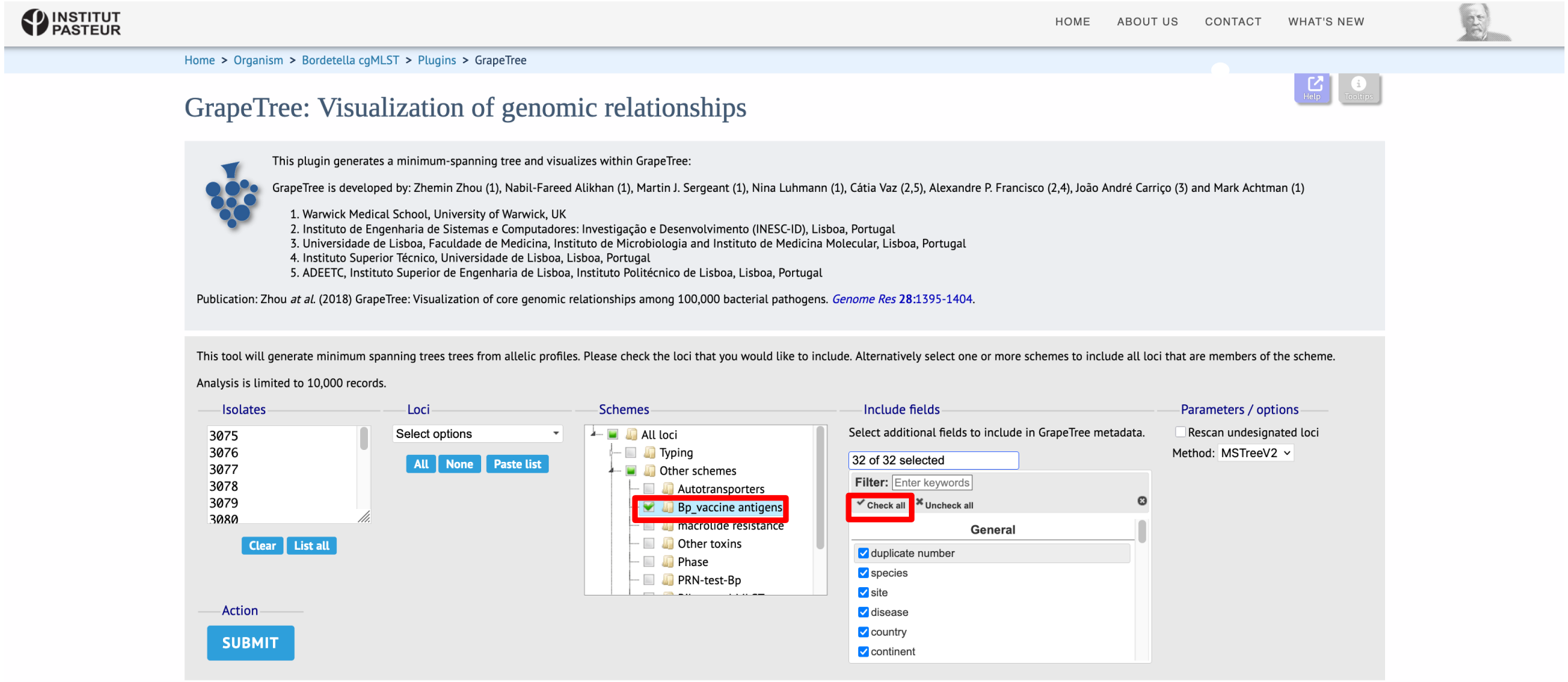

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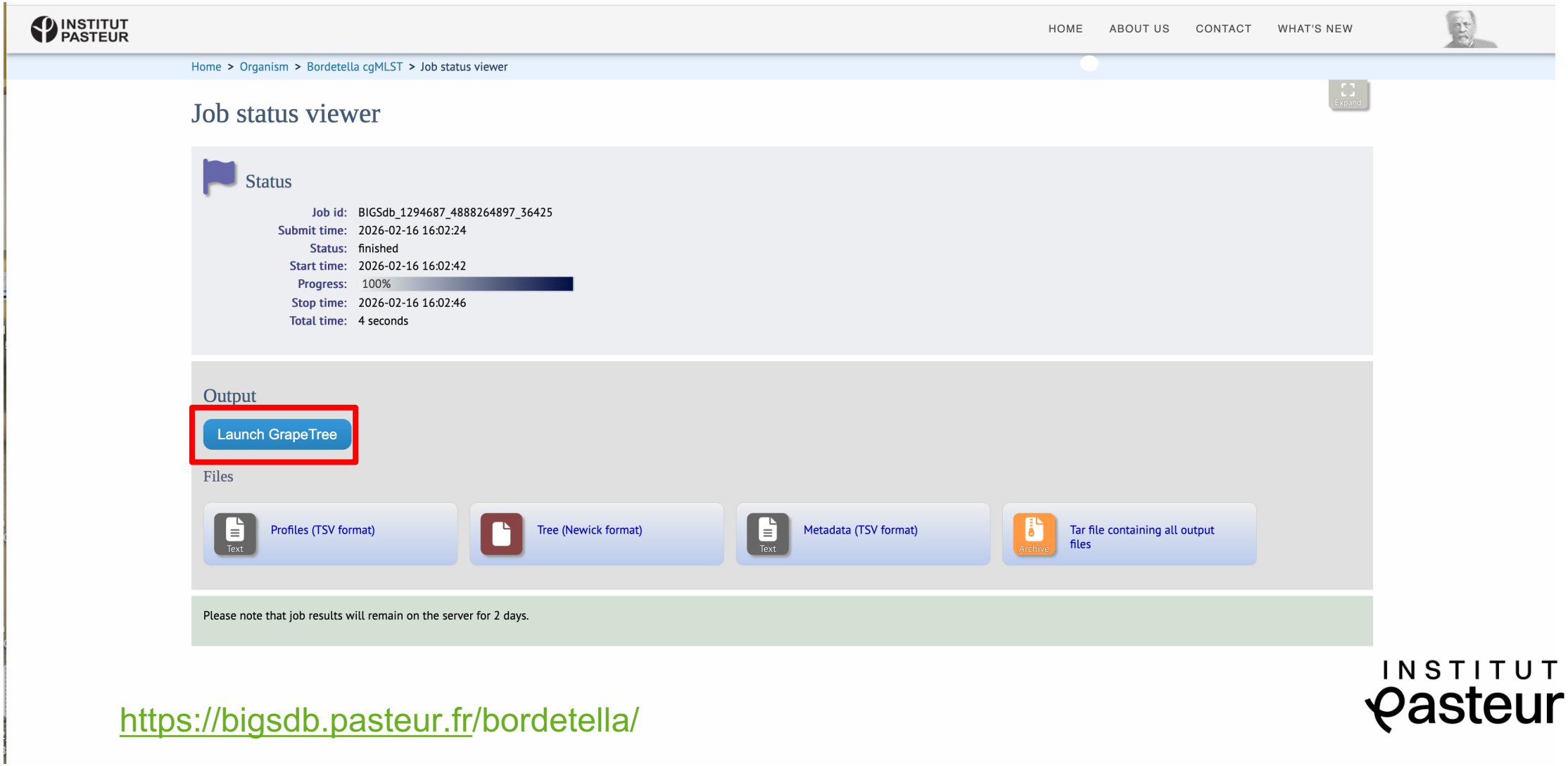

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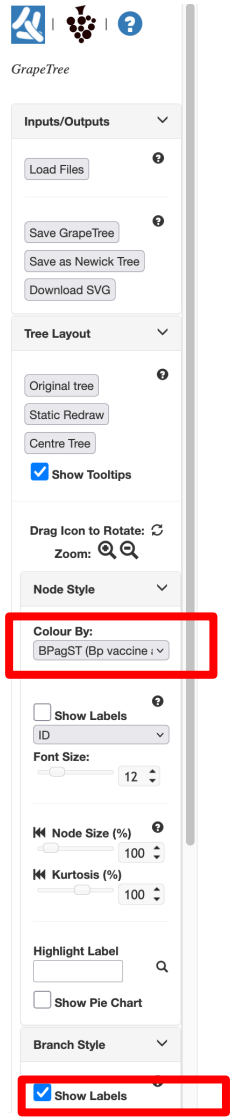

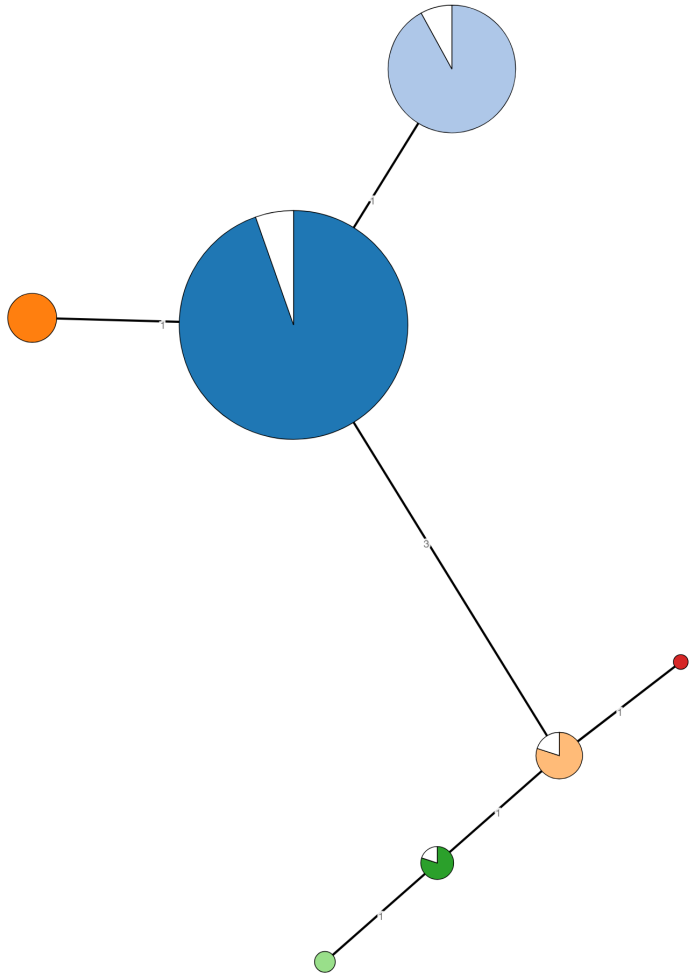

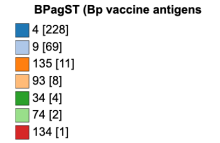

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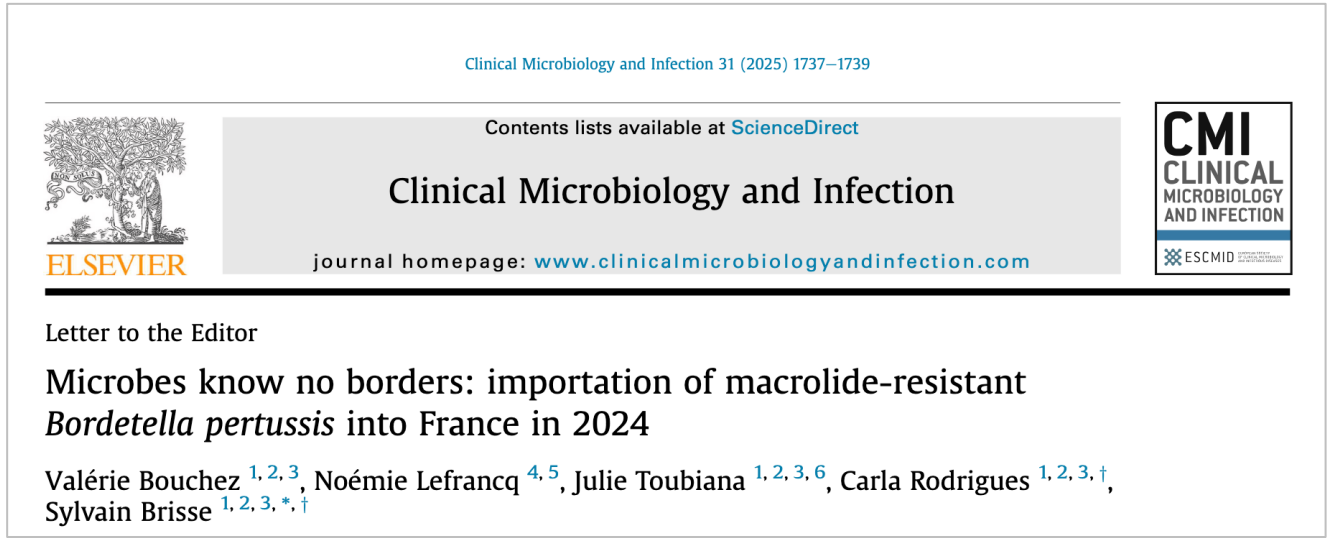

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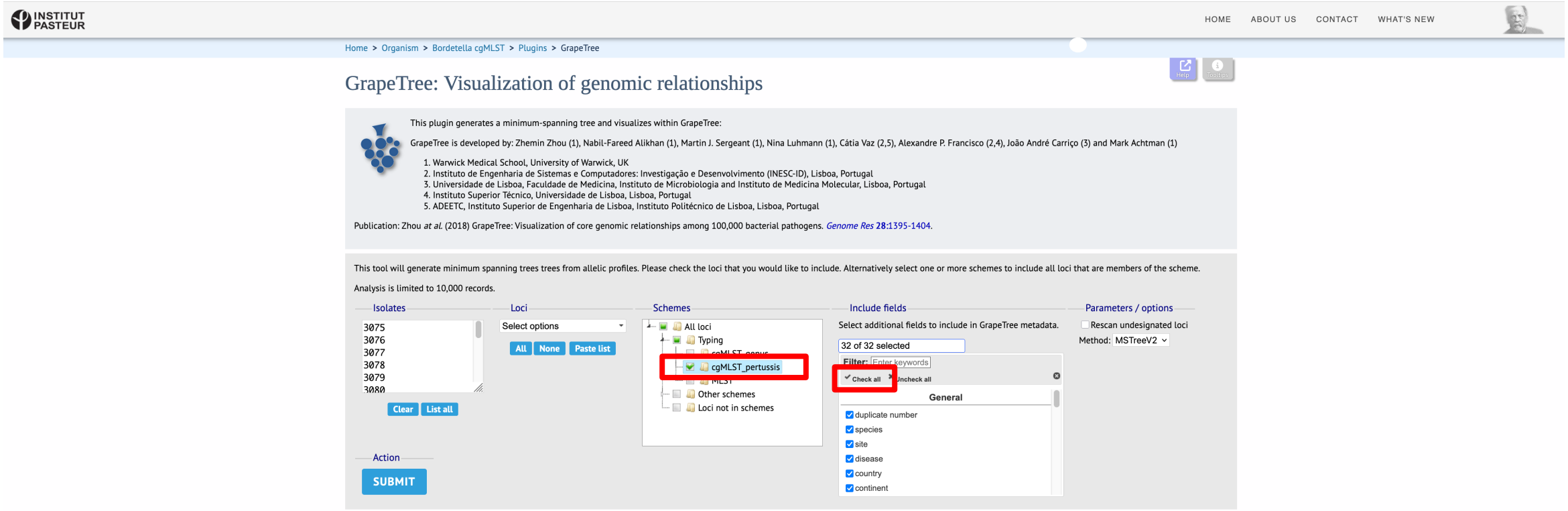

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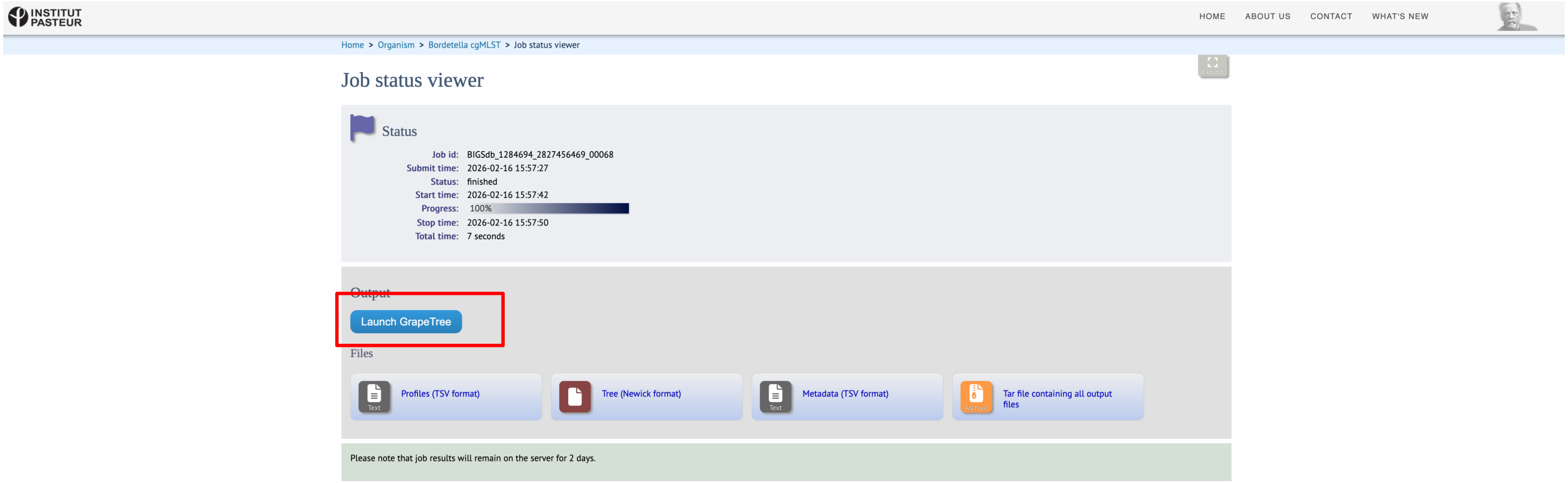

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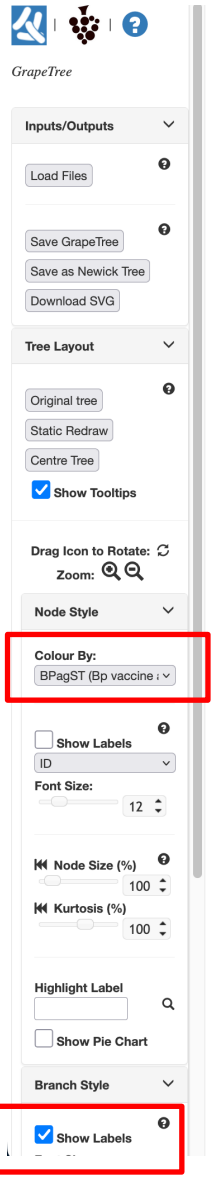

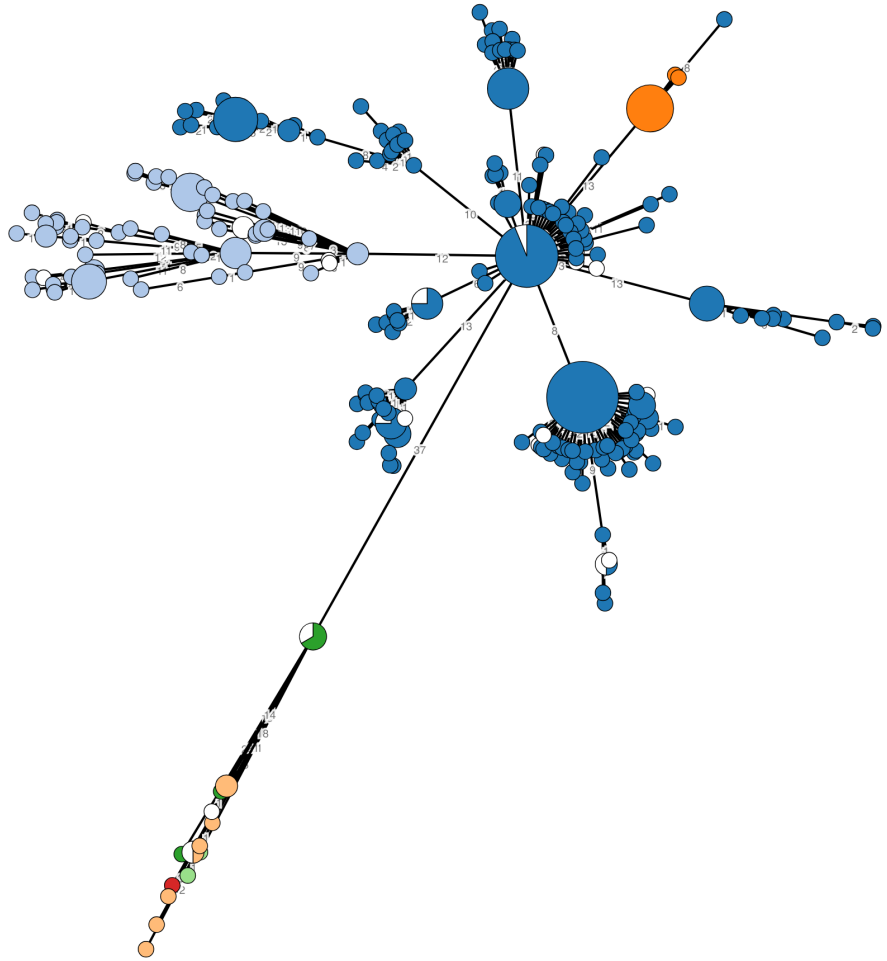

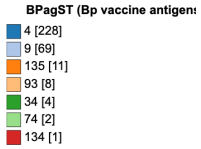

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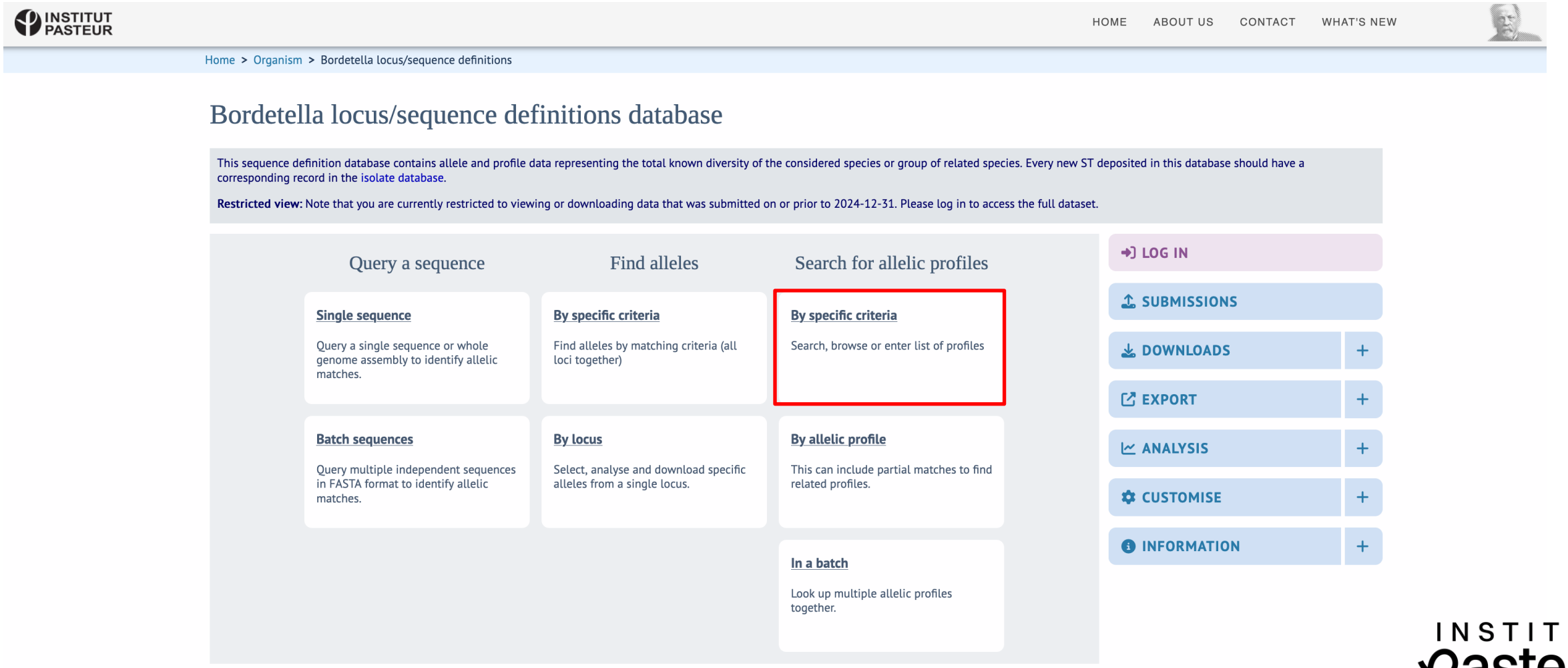

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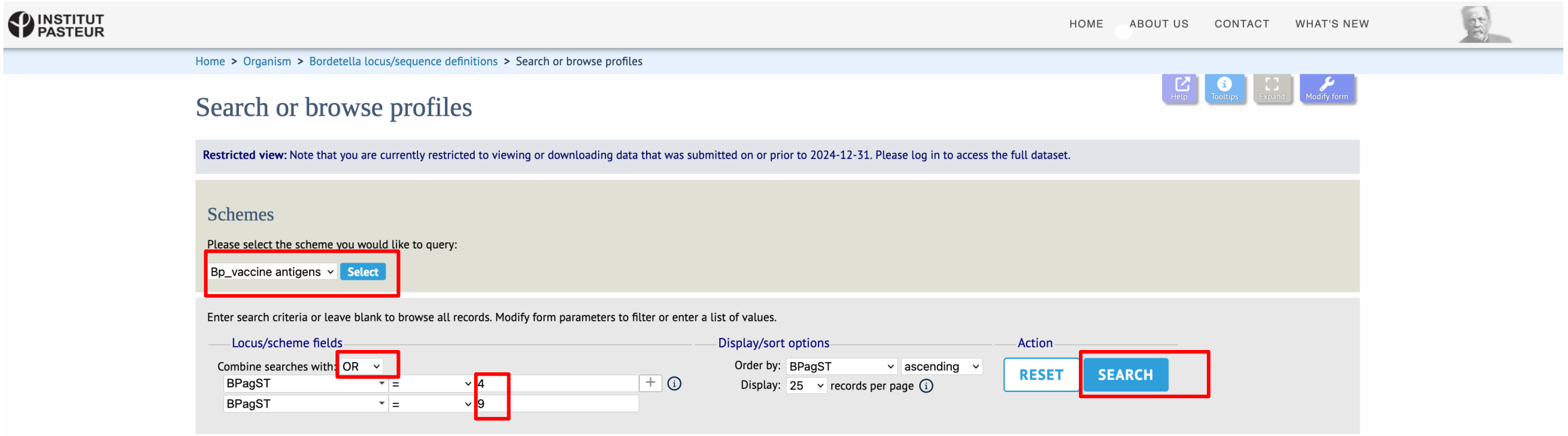

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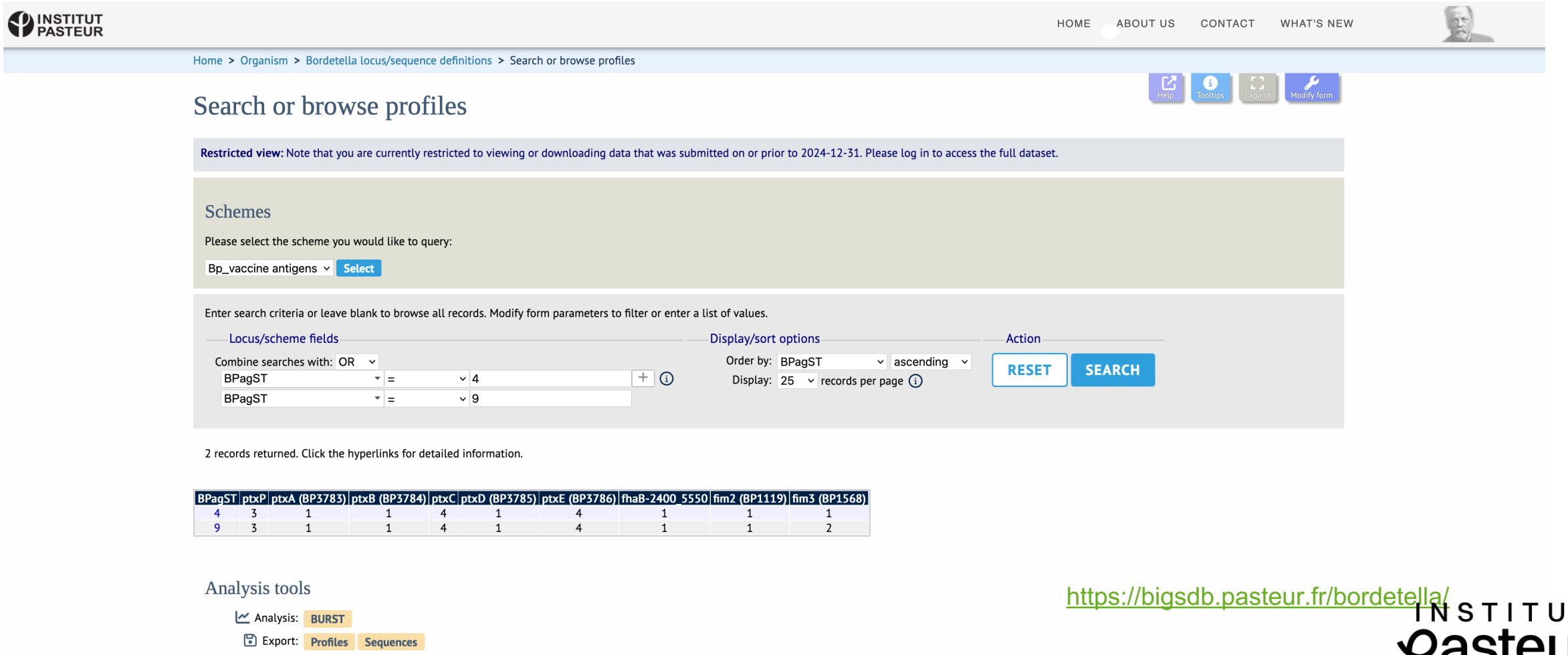

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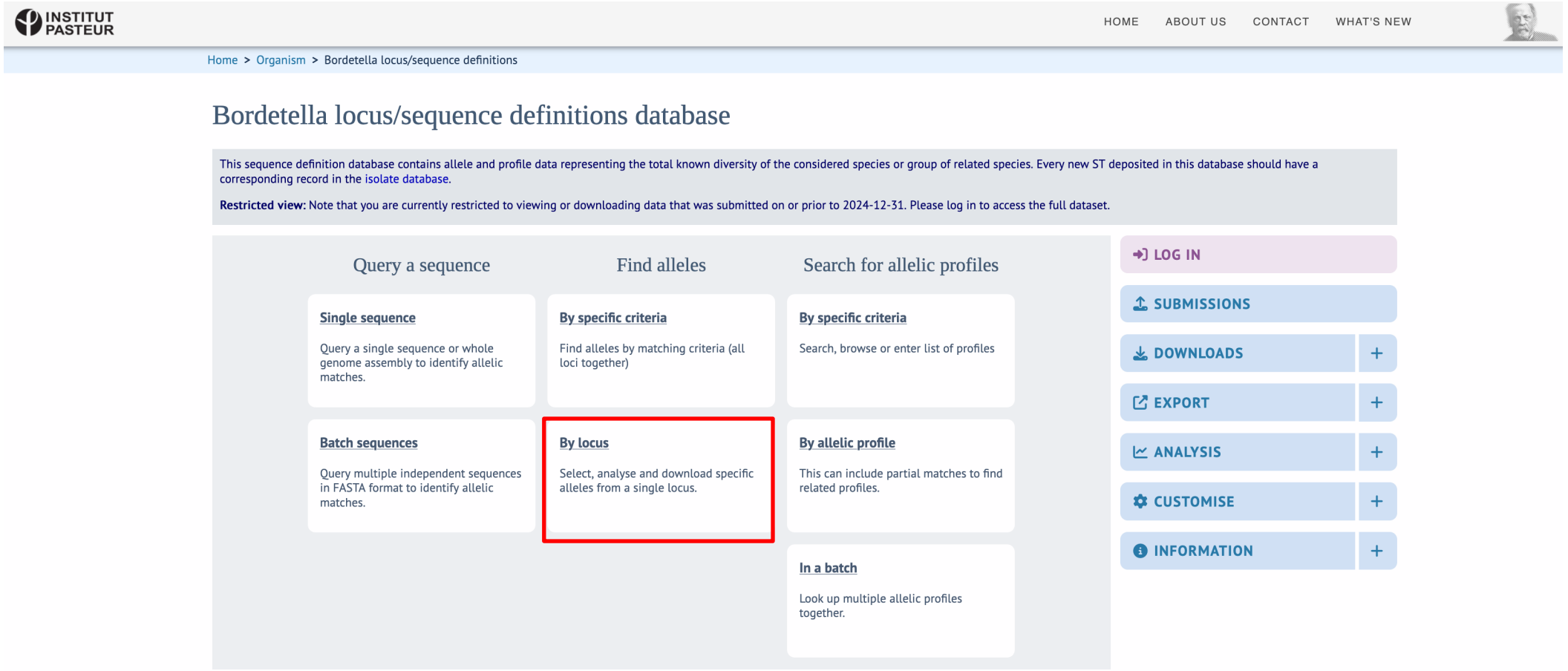

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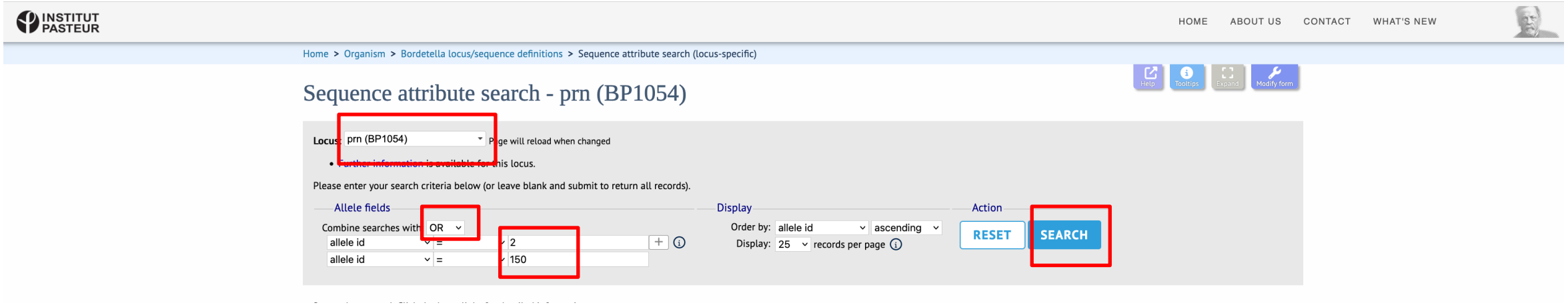

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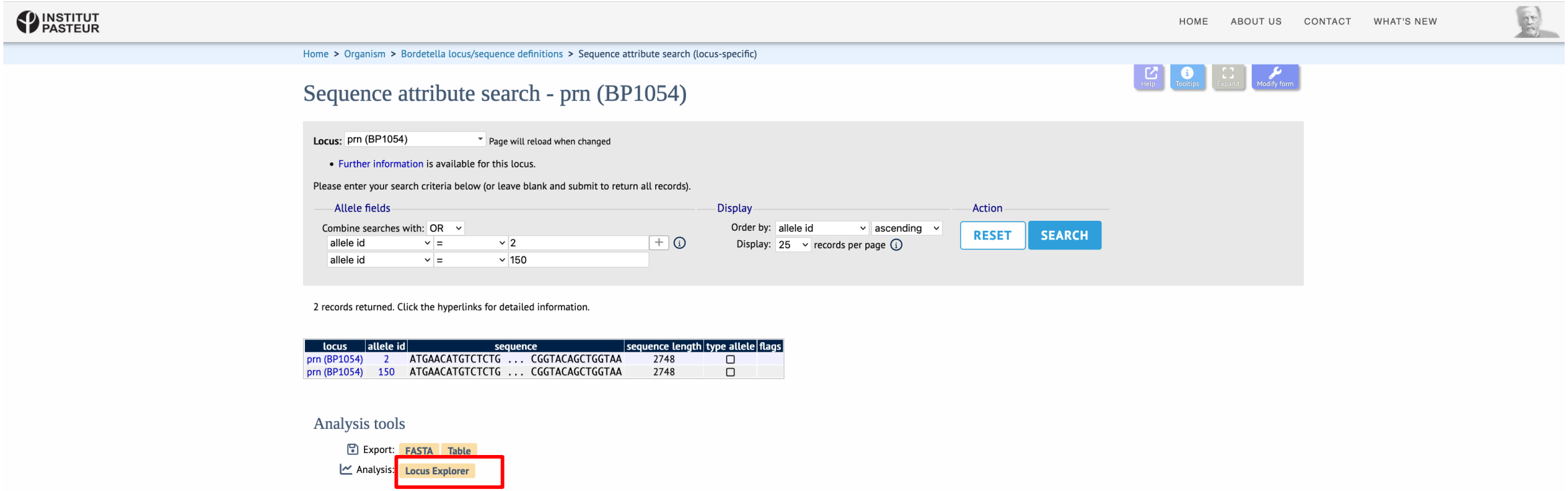

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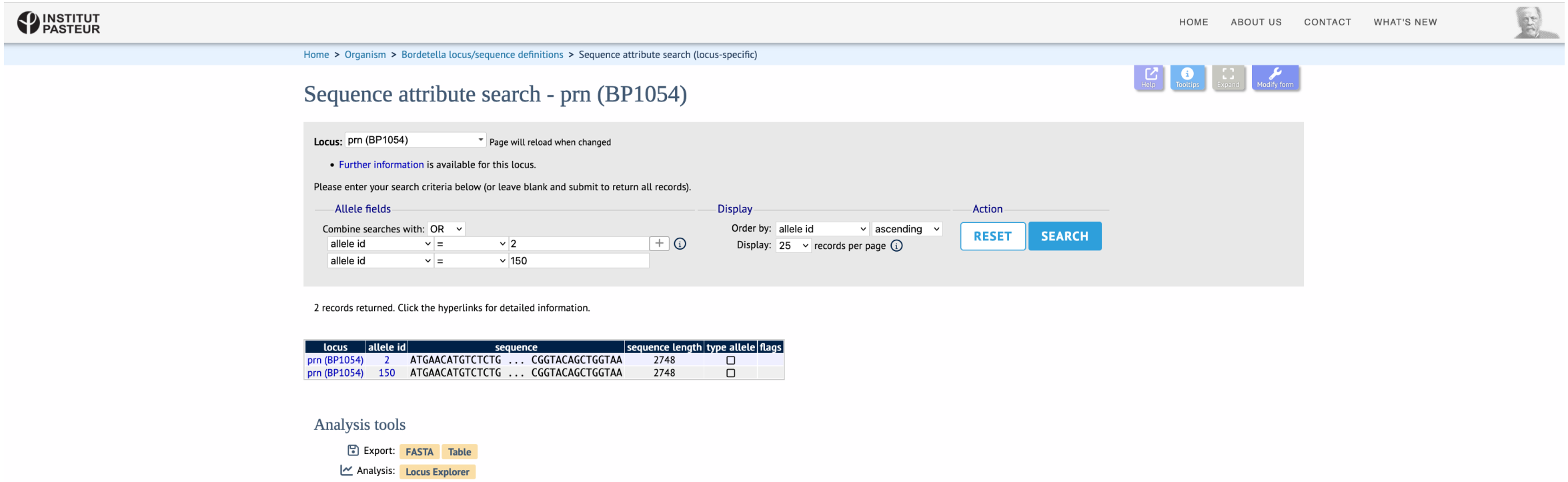

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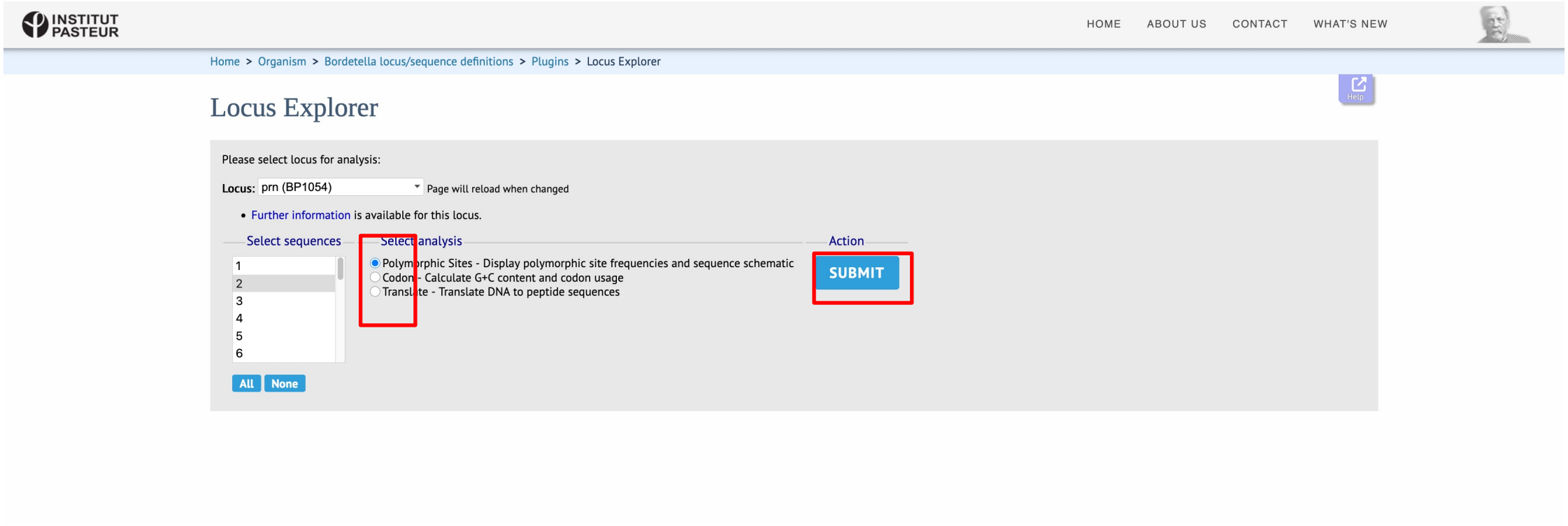

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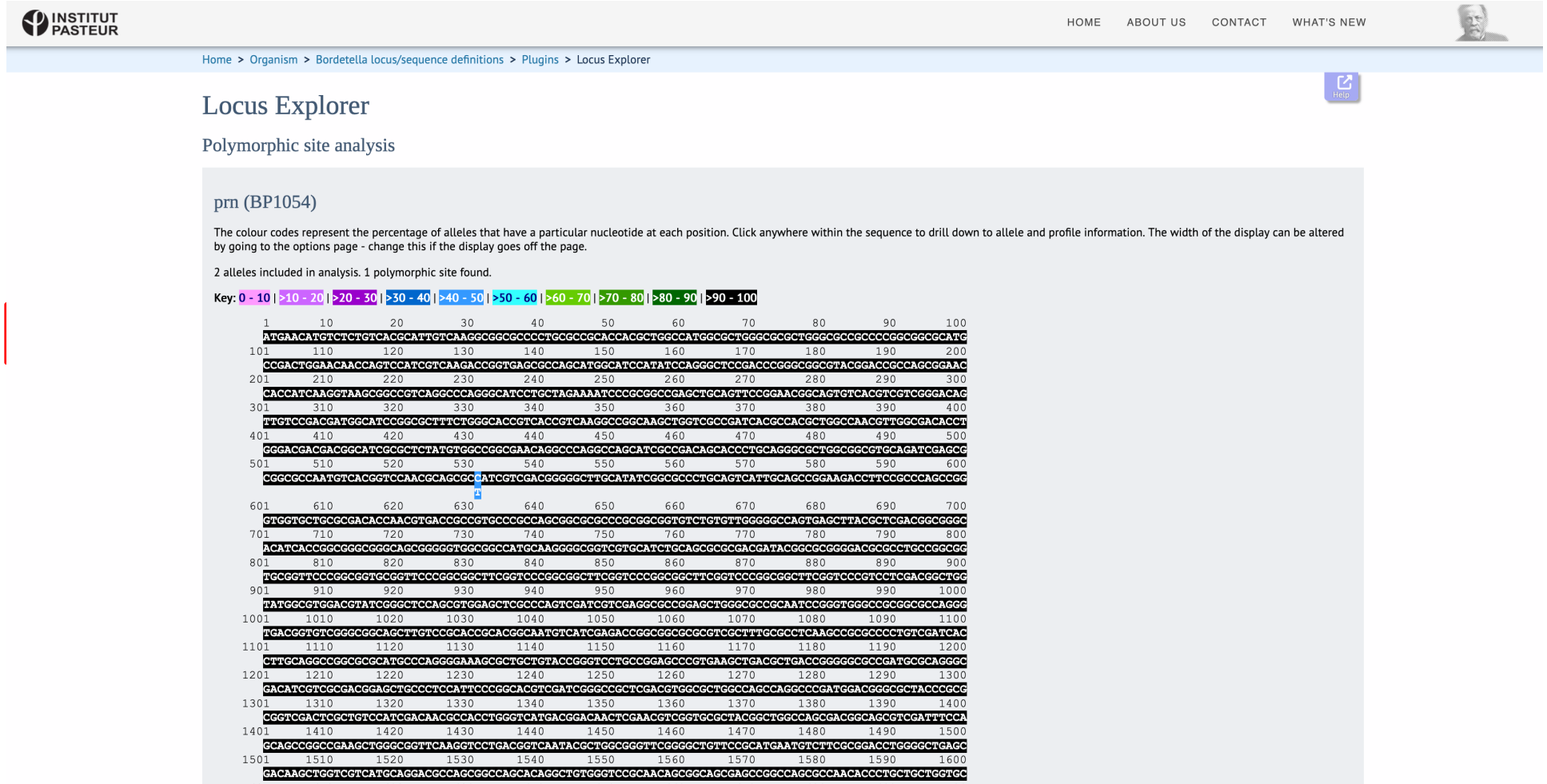

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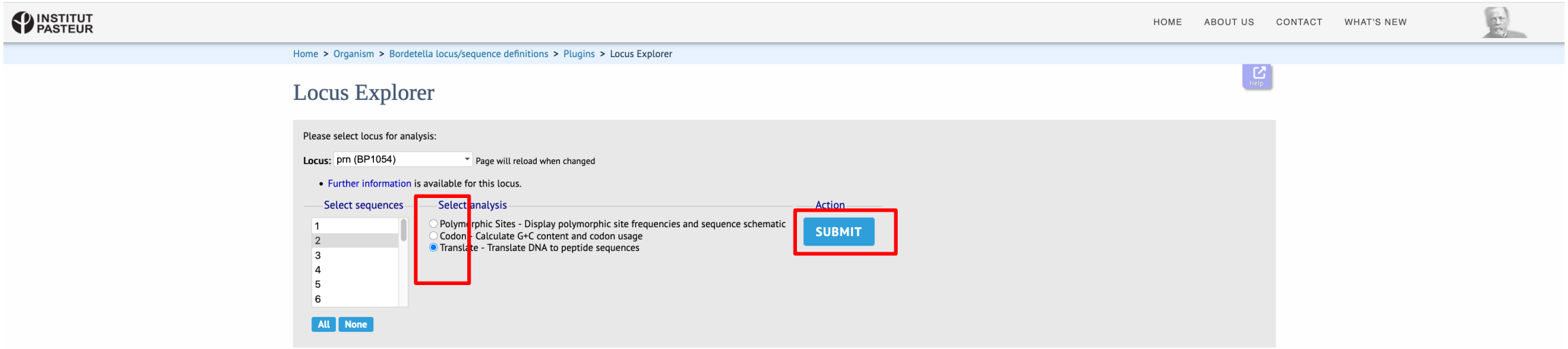

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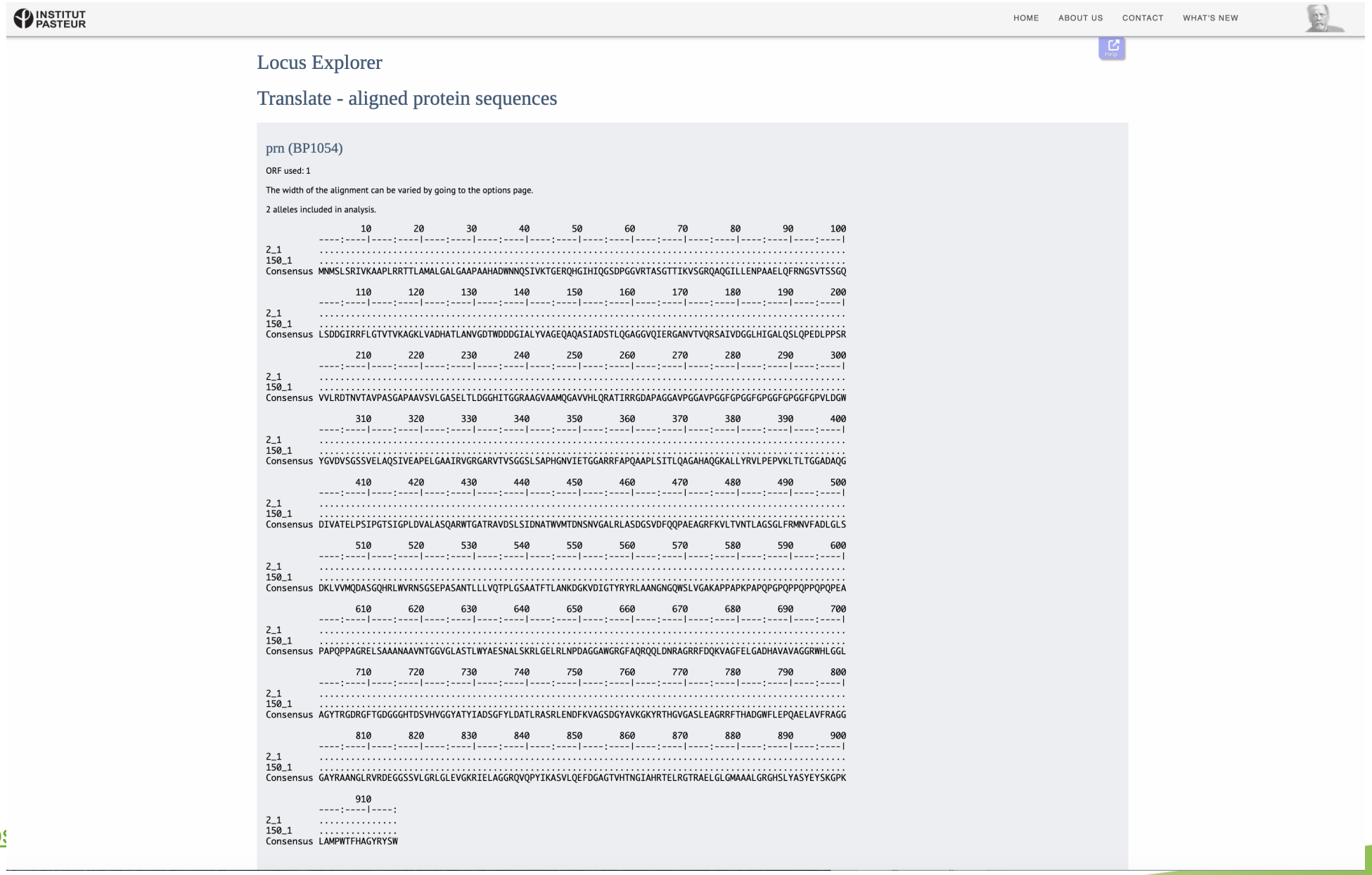

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Locus Explorer

Translate - aligned protein sequences

prn (BP1054)

ORF used: 1

The width of the alignment can be varied by going to the options page.

2 alleles included in analysis.

```
                10        20        30        40        50        60        70        80        90       100
          ----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|
2_1       ..........................................................................................................
150_1     ..........................................................................................................
Consensus MNMSLSRIVKAAPLRRTTLAMALGALGAAPAAHADWNNQSIVKTGERQHGIHIQGSDPGGVRTASGTTIKVSGRQAQGILLENPAAELQFRNGSVTSSGQ

               110       120       130       140       150       160       170       180       190       200
          ----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|
2_1       ..........................................................................................................
150_1     ..........................................................................................................
Consensus LSDDGIRRFLGTVTVKAGKLVADHATLANVGDTWDDDGIALYVAGEQAQASIADSTLQGAGGVQIERGANVTVQRSAIVDGGLHIGALQSLQPEDLPPSR

               210       220       230       240       250       260       270       280       290       300
          ----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|
2_1       ..........................................................................................................
150_1     ..........................................................................................................
Consensus VVLRDTNVTAVPASGAPAAVSVLGASELTLDGGHITGGRAAGVAAMQGAVVHLQRATIRRGDAPAGGAVPGGAFGPGGFGPGGFGPGGFGPVLDGW

               310       320       330       340       350       360       370       380       390       400
          ----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|
2_1       ..........................................................................................................
150_1     ..........................................................................................................
Consensus YGVDVSGSSVELAQSIVEAPELGAAIRVGRGARVTVSGGSLSAPHGNVIETGGARRFAPQAAPLSITLQAGAHAQGKALLYRVLPEPVKLTLTGGADAQG

               410       420       430       440       450       460       470       480       490       500
          ----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|
2_1       ..........................................................................................................
150_1     ..........................................................................................................
Consensus DIVATELPSIPGTSIGPLDVALASQARWTGATRAVDSLSIDNATWVMTDNSNVGALRLASDGSVDFQQPAEAGRFKVLTVNTLAGSGLFRMNVFADLGLS

               510       520       530       540       550       560       570       580       590       600
          ----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|
2_1       ..........................................................................................................
150_1     ..........................................................................................................
Consensus DKLVVMQDASGQHRLWVRNSGSEPASANTLLLVQTPLGSAATFTLANKDGKVDIGTYRYRLAANGNGQWSLVGAKAPPAPKPAPQPGPQPPQPPQPQPEA

               610       620       630       640       650       660       670       680       690       700
          ----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|
2_1       ..........................................................................................................
150_1     ..........................................................................................................
Consensus PAPQPPAGRELSAAANAAVNTGGVGLASTLWYAESNALSKRLGELRLNPDAGGAWGRGFAQRQQLDNRAGRRFDQKVAGFELGADHAVAVAGGRWHLGGL

               710       720       730       740       750       760       770       780       790       800
          ----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|
2_1       ..........................................................................................................
150_1     ..........................................................................................................
Consensus AGYTRGDRGFTGDGGGHTDSVHVGGYATYIADSGFYLDATLRASRLENDFKVAGSDGYAVKGKYRTHGVGASLEAGRRFTHADGWFLEPQAELAVFRAGG

               810       820       830       840       850       860       870       880       890       900
          ----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|
2_1       ..........................................................................................................
150_1     ..........................................................................................................
Consensus GAYRAANGLRVRDEGGSSVLGRLGLEVGKRIELAGGRQVQPYIKASVLQEFDGAGTVHTNGIAHRTELRGTRAELGLGMAAALGRGHSLYASYEYSKGPK

               910
          ----:----|----:
2_1       ..............
150_1     ..............
Consensus LAMPWTFHAGYRYSW
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Questions?

Acknowledgements

The creation of this training material was commissioned by ECDC to Institut Pasteur with the direct involvement of Valérie Bouchez.