

Introduction

- ✓ Animal foods are important to human health.
- ✓ Intensive production system is adopted to improve animal production.
- ✓ Stress associated with confined animals may affect their productivity and lead to pathogenic colonization.
- ✓ Feed additives such as probiotics are necessary to overcome the aforementioned problems but their functions are not fully understood.

Objective

To investigate interleukin-6 inducing capacity of selected uncharacterized proteins of *Lactobacillus acidophilus*

Materials and methods

Sequence retrieval and analysis

- ✓ Reference genome of *Lactobacillus acidophilus* (CP005926.2) sequence was retrieved from NCBI.
- ✓ Protein families were sorted in PATRIC.
- ✓ 14 uncharacterized proteins were randomly selected for IL-6-inducing analysis
- ✓ IL-6-inducing capability was done using il6pred
- ✓ IL-6 co-expression was done using GENEVESTIGATOR
- ✓ Physicochemical properties were investigated using ExPASy ProParam

Results

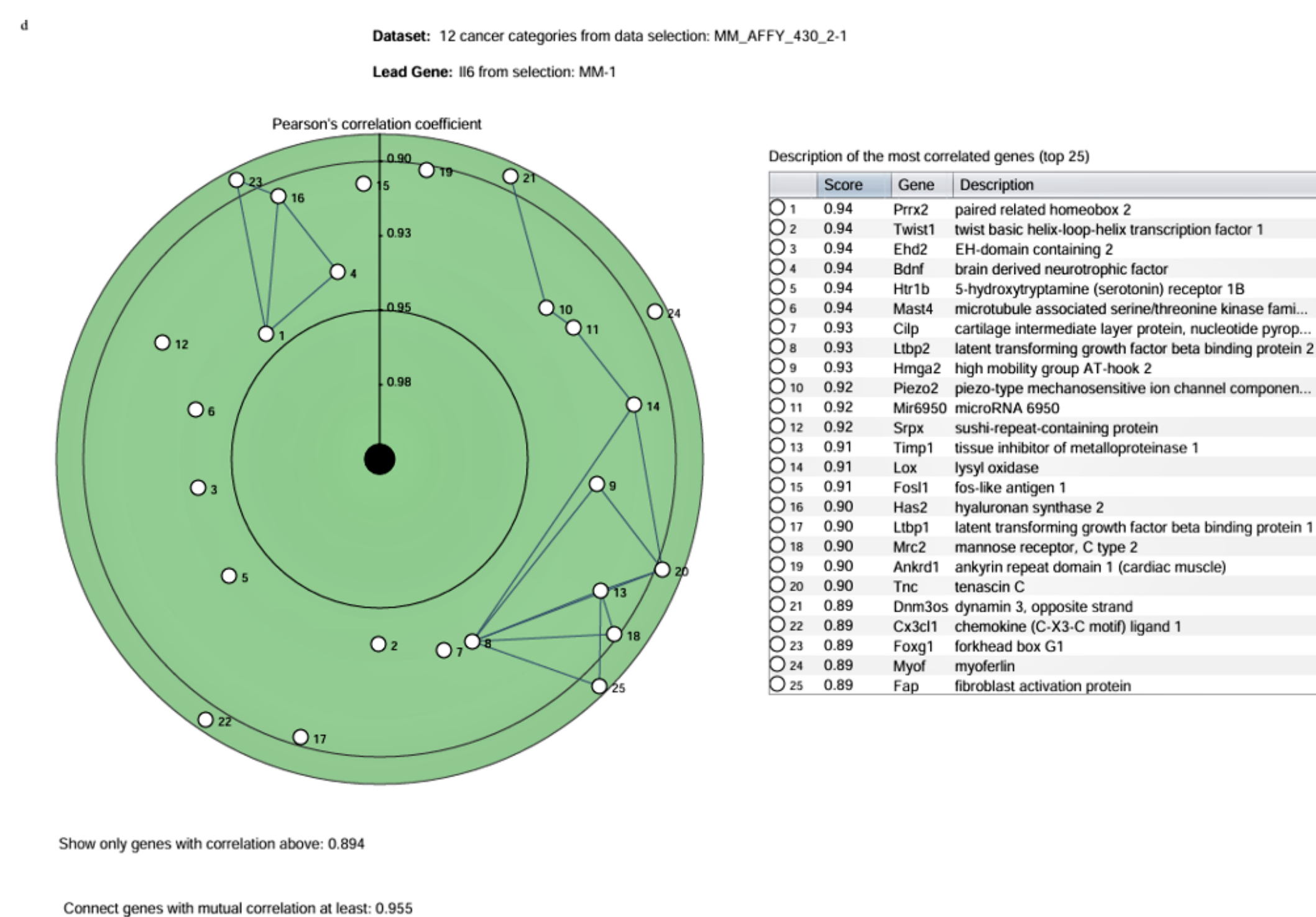


Figure 1. A circular view of positively co-expressed genes with IL-6 in *Mus musculus* across various anatomical, neoplasm and cell categories

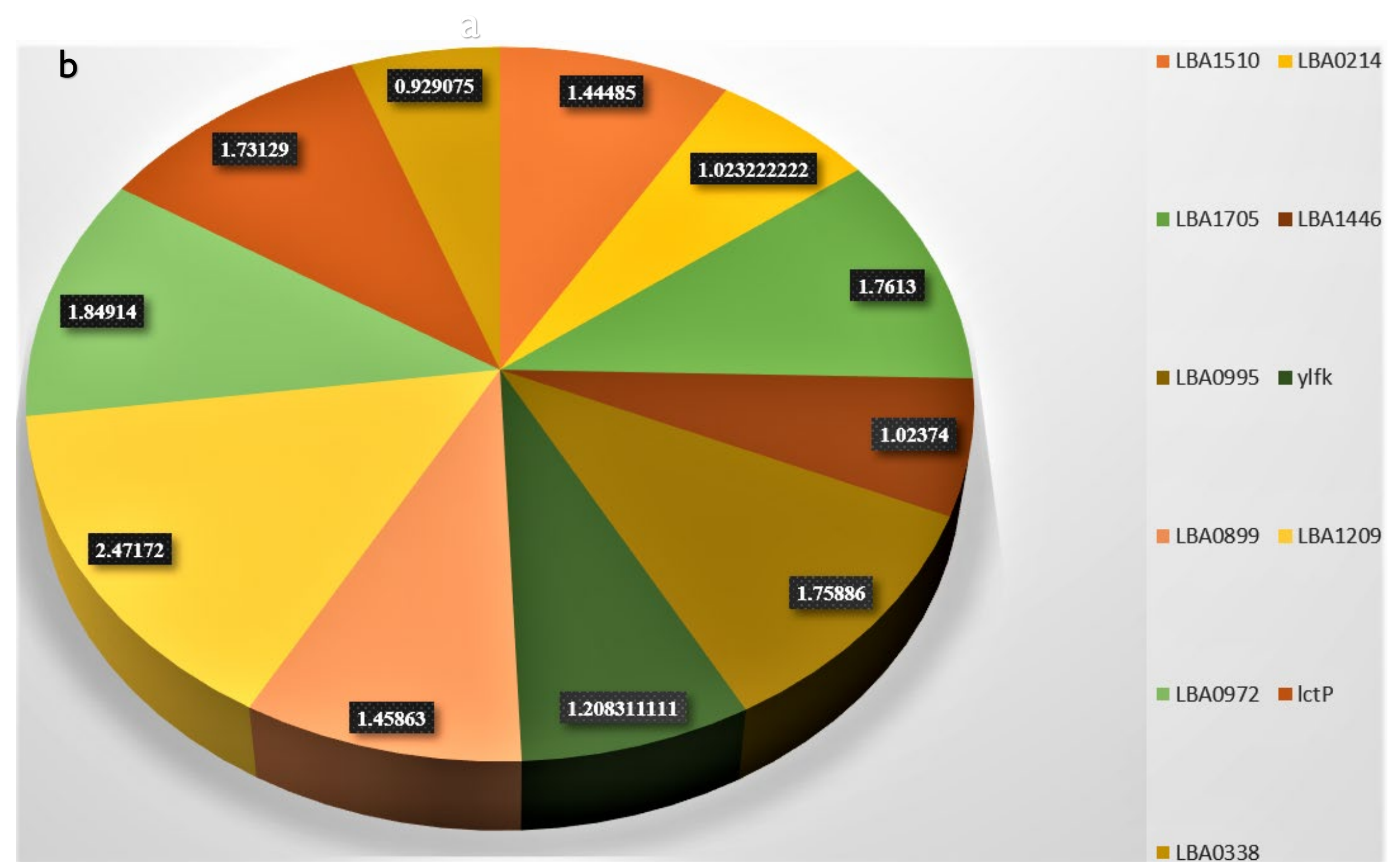
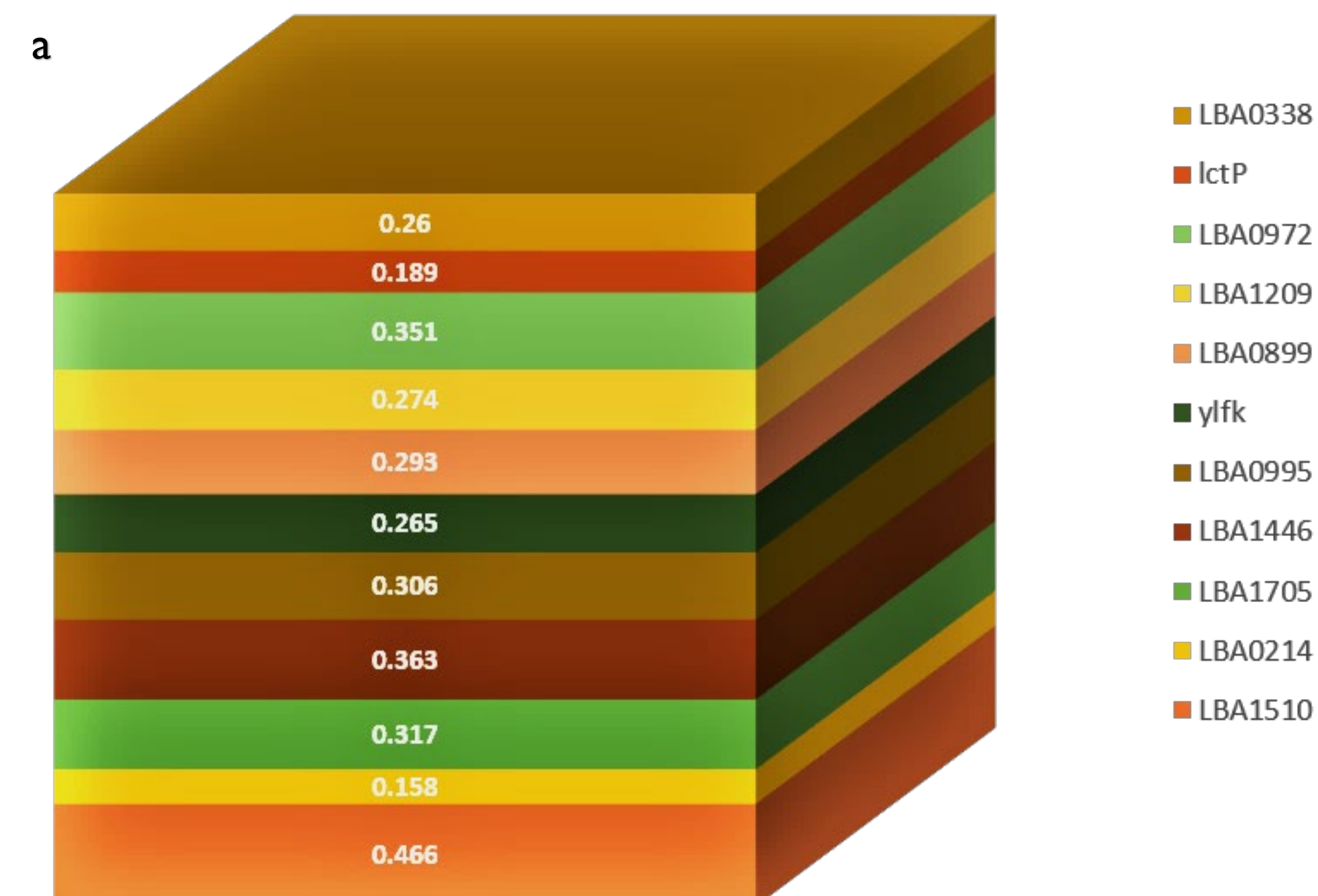


Figure 2. Immunogenic IL-6-inducing peptides from uncharacterized proteins of *L. acidophilus* reference genome: a. according to their IL-6-inducing prediction values; b. according to their immunogenicity values

Table 1. Physicochemical properties of selected uncharacterized proteins of *Lactobacillus acidophilus*

Proteins	#AA	AI	pI
LBA1510	859	110.70	9.43
LBA0214	255	87.88	5.61
LBA1705	93	138.39	9.60
LBA1446	490	121.20	9.66
LBA0037	265	104.38	9.21
LBA1825	87	78.39	9.80
LBA0995	490	104.71	8.64
LBA1788	69	104.49	6.55
yIfk	457	122.04	9.25
LBA0899	463	117.49	9.49
LBA1209	292	105.21	9.10
LBA0972	295	121.97	9.43
LctP	505	135.28	8.41
LBA0338	252	128.10	9.61

#AA = number of amino acids; pI = theoretical isoelectric point; AI = aliphatic index

Summary

- ✓ Amino acid length ranged between 69 (LBA1788) and 859 (LBA1510)
- ✓ The theoretical isoelectric points ranged between 5.61 (LBA0214) and 9.80 (LBA1825)
- ✓ The aliphatic index (AI) scores were generally high
- ✓ AI scores ranged from 138.39 (LBA1705) to 78.39 (LBA1825)
- ✓ 79% of the selected proteins produced immunogenic IL-6 peptides
- ✓ LBA0037, LBA1825 and LBA1788 produced non-immunogenic or non-IL-6-inducing peptides
- ✓ IL-6 is positively co-expressed with are Prrx2, Twist1, Ehd2, Bdnf, Htr1b, Cilp, Ltbp2 and Hmga2 among others.