







La ricerca si fa impresa







SNPchiMp:

A database to disentangle the (bovine) SNPchip jungle

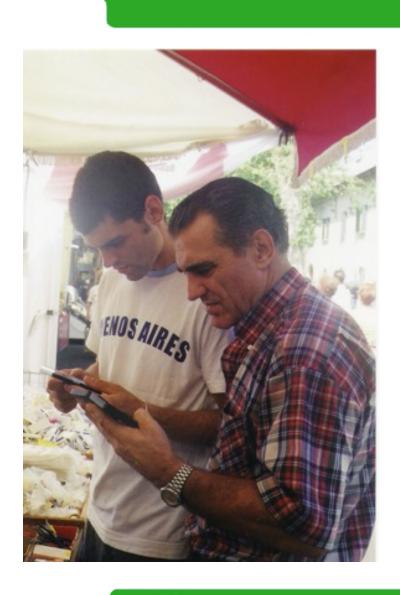
Nicolazzi E.L. & Picciolini M., Strozzi F., Schnabel R.D., Lawley C., Eggen A., Pirani A., Brew F., Stella A.





Some time ago...

Competere per l'eccellenza



"A job well done, always starts from having the right tools" (J. A. Nicolazzi)

Corollary: "if you find yourself with a hammer in one hand and a screw in the other, something went terribly wrong!"



Welcome to the (bovine) jungle

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Illumina Infinium Bovine SNP50

- √ 1 chip, 1 assembly (BTAU 4.0)
- Many output formats (row, matrix, etc) and allele coding (forward, top, A/B)
- x Difficult link between Illumina SNP names and other P.A. DBs



Illumina Infinium Bovine SNP50 (v.2) Illumina Golden Gate Bovine3k Illumina Infinium BovineLD Illumina Infinium BovineHD

- ✓ Improved quality of information✓ More (less) SNPs
- x Many output formats (row, matrix,etc) and allele coding (forward,top, A/B) Difficult link between Illumina SNP names and other P.A. DBs
- x 2 assemblies (BTAU 4.0 and UMD 3.1) = different positions and chromosomes x SNPs in common?
 - x SNP names in common?

Affymetrix Axiom Bos1 (HD)

- ✓ New technology✓ New SNPs
- x New formats and procedures
 - x SNP in common?
 - x SNP names in common?
 - x Concept of probe!





Few custom SNPchips

The concept (and methods) of the SNPchiMp

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Chips

SSinfo

	Total		rs IDs without map information		
SNPchip		no rs ID	BTAU4.2	UMD3.1	BTAU4.6
Bovine3k	2,900	14	17	5	20
BovineLD	6,909	3	94	14	111
BovineSNP50v.1	54,001	0	1,970	204	1,852
BovineSNP50v.2	54,609	18	2,154	340	2,031
BovineHD	777,962	13	72,014	3,338	64,528
Axiom BOS 1	648,875	288,601	130,618	0	16,207

oIll_SNP50_v2 INT(1!)
oIll_BovineHD INT(11)
oAffy_AxiomBosl INT(11)

The SNPchiMp is born...



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Why not putting all this information toghether and easily accessible/downloadable online?

http://bioinformatics.tecnoparco.org/SNPchimp/





Download section

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illumina_name	affymetrix_name	ILL_3k_chip	ILL_54k_v1_chip	AFFY_HD_chip
BovineHD0100000005	AX-18000040	0	0	1
BovineHD0100000037	AX-18000406	0	0	1
ARS-BFGL-NGS-16466	AX-18000987	0	1	1
ARS-BFGL-NGS-19289	AX-18001148	0	1	1
BovineHD0100000107	AX-18001429	0	0	1
BovineHD0100000128	AX-18001613	0	0	1
BTA-07251-no-rs	AX-18001779	0	1	1
BovineHD0100000146	AX-18001848	0	0	1
BovineHD0100000165	AX-18001972	0	0	1
ARS-BFGL-NGS-98142	AX-18001989	0	1	1
ARS-BFGL-NGS-29653	AX-18009026	1	1	1
BovineHD0100000198	AX-18002533	0	0	1
BovineHD0100000201	AX-18002592	0	0	1
BovineHD0100000252	AX-18003394	0	0	1
BTB-00003652	AX-18022845	1	1	1
BovineHD0100000261	AX-18003553	0	0	1
BovineHD0100000262	AX-18003561	0	0	1
ARS-BFGL-BAC-32770	AX-18003602	0	1	1
ARS-BFGL-BAC-1180		1	1	0
ARS-BFGL-BAC-14277		1	1	0
ARS-BFGL-BAC-14374		1	1	0



Browse section



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Browse section

Step 1: Please select one	e or more assemblies:				
□ Native platform □ UI	MD 3.1 BTAU 4.2 BTAU 4.6				
Step 2: Information requ	ired:				
rs ID	Present in Chip				
Chromosome and Posit	ion Selected ss information All ss by rsID information				
Step 3: Write your query Browse SNPs by position	Syntax chromosome:start_positionstop_position				
Browse SNPs by rs IDs	Syntax rsId1,rsId2,,rsIdn				
Browse SNPs by ss IDs	Syntax ssId1,ssId2,,ssIdn				
Browse SNPs by name	Syntax SNPname1,SNPname2,,SNPnamen				

Preview (first 100 records)

SNPchiMp web tool

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Reference SNP(refSNP) Cluster Report: rs134968716

Information Display

Browse result preview 100 elements

Click on SNP name to open external Ensembl an



Export Your Data

Downland CSV

Click here for a new query

dbSNP Short Genetic Variations Protein Genome Structure PopSet Taxonomy Search for SNP on NCBI Reference Assembly for Reference SNP(refSNP) Cluster Report: rs134968716 RefSNP Allele Organism: cow (Bos taurus) SNV: Variation Class: single nucleotide variation Molecule Type: Genomic RefSNP Alleles: G/T Created/Updated in build: 133/137 Allele Origin: Map to Genome Build: 6.1 Ancestral Allele: Not available Validation Status: MAF/MinorAlleleCount: NA MAF Source:

Resource

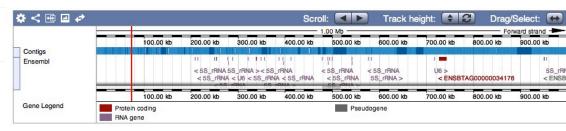
Chromosome 14: 74,484-75,484

SNP Details are organized in the following sections:

GeneView Map Submission Fasta



Region in detail 19



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Benefits of the SNPchiMp

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- **All information** available with a few clicks of the mouse
- Avoid SNP names cross-reference problems.
- **Update** chromosome and position information (in any assembly).
- Transform allelic coding formats.
- Across-chip / across-platform genotype imputation & integration of data (e.g. exchange of information).
- ✓ Selection signatures and GWAS: explore your results directly, link your SNPs to dbSNP and ENSEMBL
- Help in SNP data integration with sequence data



Version 2.0 (*W.i.P.*)

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- ↑ Publish Version 1.0... still waiting for reviewers response.
- GeneSeek Genomic Profiler (thank you Qualitas and G. Evans)
 - ↑ LD (19K SNPs) + HD (80K SNPs)
- Interbull Index (thank you H. Jorjani)
 - Within and across indexes for international genomic data exchange.
- ⚠ New chips?
 - Custom CRV 50k
 - EuroG10k (Eurogenomics)
 - AussieLD (9k)
 - N ...
- dbSNP consensus + sender sequences (still under study)
- ♣ Update to cow Build 138.
- ↑ Multiple species: Pig, Horse, Sheep, Goat, Buffalo, Dog, Cat, Fish(?).

Now it's your turn to meet the chiMp...

Parco Tecnologico Padano

Competere per l'eccellenza

http://bioinformatics.tecnoparco.org/SNPchimp/



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