

## **Interbull Scientific Advisory Committee (SAC)**

### **Annual report (2011-2012) to the Interbull Steering Committee**

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This year marks five years since the Interbull SAC advised on the necessity to act on the advent of large scale genotyping with DNA arrays and the ensuing need for international genomic predictions and comparisons.

This report summarises the main points of the early (2007) report, reviews the relevant activities and makes recommendations for future action.

#### **The 2007 SAC report**

At the 2007 meeting, the following were identified as areas of Interbull involvement in the genomics era:

1. Information exchange (the traditional role of Interbull through meetings/workshops).
2. Coordinate worldwide research on optimal data combination from different sources, including genomic, phenotypic and pedigree data.
3. Consider the development of genomic prediction services that would enable genomic selection of young animals without own or daughter performance records across different countries and environments.
4. Use genomic data to monitor worldwide diversity and genomic relationships.
5. Provide an independent service to monitor genomic evaluations run elsewhere.

Methodology and data accessibility were identified as the key issues.

#### **Review of relevant Interbull activities since 2007**

In addition to the annual meetings being dominated by presentations on genomic predictions, Interbull organised three technical workshops on genomic evaluations (Uppsala 2009, Guelph 2011 and Verona 2012). These activities offered useful platforms for information exchange and increased awareness, thereby effectively addressing point 1 above.

The same activities provided the forum to coordinate worldwide research aiming at identifying the most suitable methodology to combine genomic data (point 2). Along the same lines, Interbull established a Task Force for the development of international genomic evaluations and set up the Intergenomics project (together with the Brown Swiss Federation). The reference population sharing feature of Intergenomics was also relevant with point 1. In that project, however, considerable in-house research and development (R&D) activities have deviated emphasis from the coordination of international research and also led to delays in launching the service.

Nevertheless, in 2012, the R&D component of Intergenomics was successfully completed with the launch of the first routine genomic evaluation of the Brown Swiss breed, marking the onset of Interbull's genomic prediction services (point 3). However, this service is currently extended only to one breed, whereas the other breeds will have to wait until 2013 when GMACE, an approach theoretically inferior to that of Intergenomics, is expected to be launched.

Points 4 and 5 above were not addressed, possibly because of priority being rightfully given to efforts expanded for points 2 and 3.

### **Future considerations**

Although a lot of good effort has been spent to improve GMACE, the model proposed by Intergenomics is clearly better. In previous reports, the SAC had proposed GMACE as an interim approach until methods to explicitly calculate SNP effects on the scale and base of each participating country (something that presupposes access to animal genotypes) became available. Interbull now faces the paradox where the latter occurred first.

Building on the success of Intergenomics, Interbull should focus their efforts on expanding the service to other breeds (provided the same spirit in data sharing is cultured), bearing in mind the following:

1. There are more than 45,000 animals genotyped worldwide. This resource is currently managed by initiatives outside Interbull. It would be worth analysing the situation to determine (a) why these initiatives are outside the organisation and (b) what is the organisation's competitive advantage that would attract the keepers of this resource. The core competences discussed in the SAC 2011 report combined with the considerable IT investments and developments at the Interbull Centre (and elsewhere) would be useful in this regard.
2. The service outcomes need to be properly validated to ensure that genomic breeding values of young bulls are accurate predictions of future daughter performance.

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The Interbull SAC