

# TOWARDS AN INTEGRATED ANALYSIS OF CRYPTORCHIDISM IN GERMAN SHEEP POODLE

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Figure 1: German Sheep Poodle<sup>5</sup>

## BACKGROUND

Cryptorchidism is a disease, in which one or both testes do not descend into the scrotum properly<sup>1</sup>. It affects up to 4% of men<sup>2</sup> and 10% of male pups<sup>3</sup>.

Amongst other disorders it is associated with a 13.6 times higher risk for the development of malignant neoplasms and is correlated with an impaired spermatogenesis<sup>4</sup>.

Despite its associated health risks and accompanying economic damage, resulting from surgery and losses in breeding<sup>1</sup>, studies on canine cryptorchidism and its causes are relatively rare.

## OBJECTIVE

- Setting up a **relational database** with known cryptorchidism-associated genetic variants based on the CryptoGene database<sup>6</sup>
- Sequencing** associated genes using the MinION to identify new variants and develop a **genetic test**

Bio-informatic analysis

Molecular biological analysis

Aggregate information in database

Establish PCR of associated genes

Create relational database

Nanopore sequencing by MinION

Create free online access

Develop genetic test

Figure 2: Objective and outlook of the study (portrayed stage is boxed)

## RESULTS

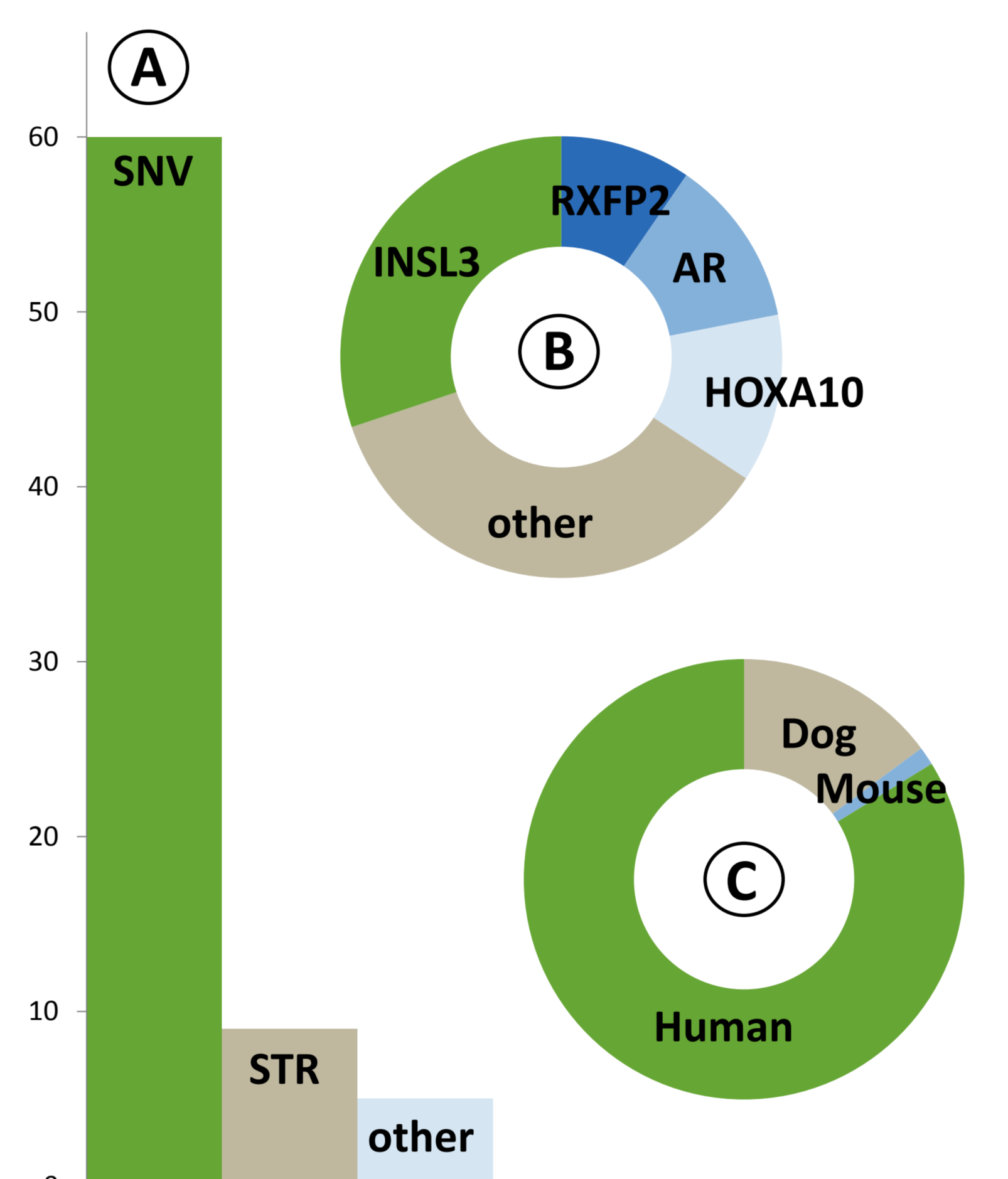


Figure 3: Database entry distributions of a) data types, b) genes and c) species

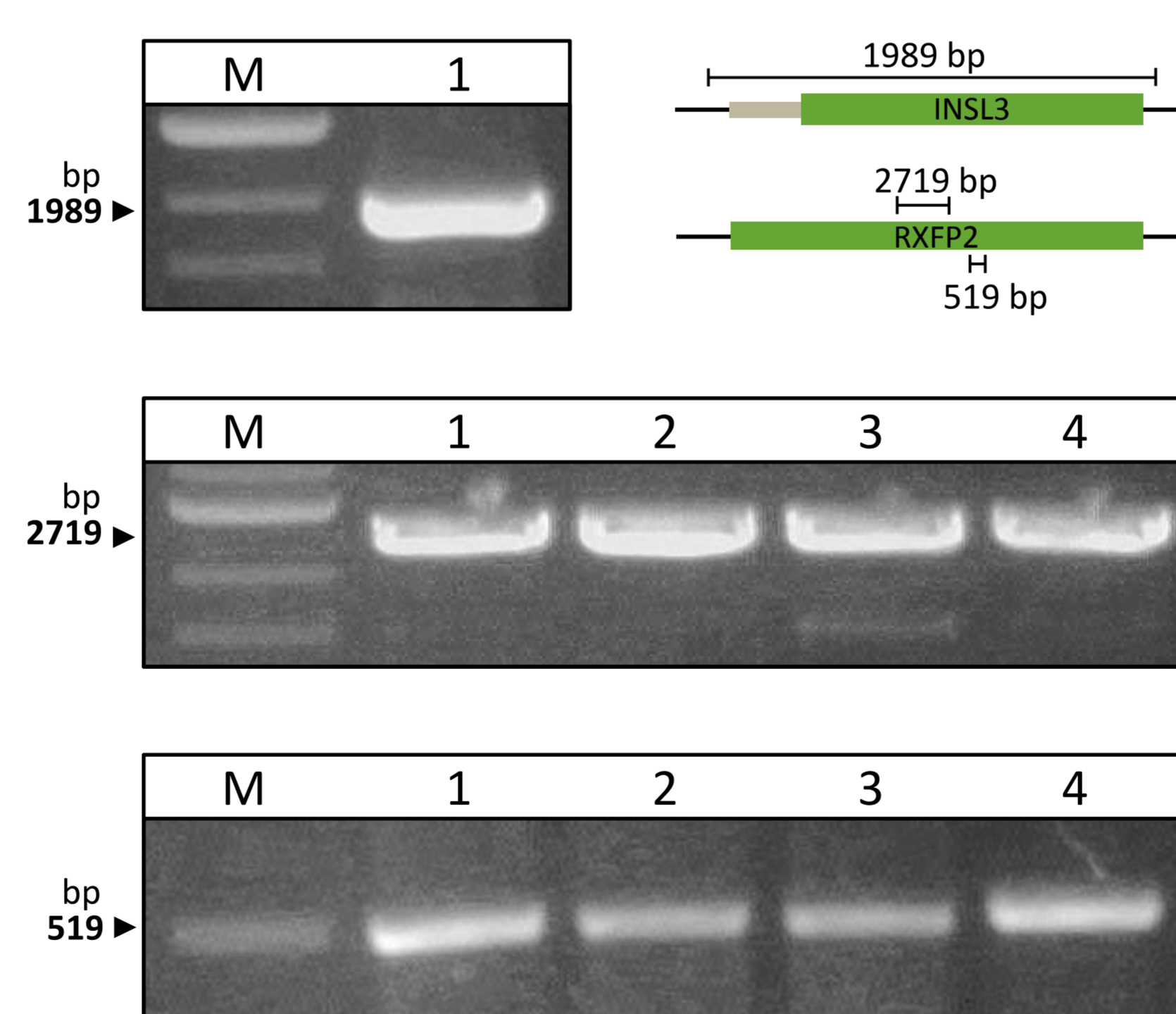


Figure 4: Amplicon agarose gel electrophoresis of INSL3 and exons 6-8 and exon 10 of RXFP2

## CONCLUSION

A database containing 74 genetic variants in dogs, humans and mice was set up. Only 14.9% of all entries are found in dogs.

PCR based amplification of INSL3 and four exons of RXFP2 was established.

## OUTLOOK

The bioinformatics and experimental studies serve as starting points in preparation to identify variants that could elucidate genetic etiology of canine cryptorchidism.

After an update in spring 2019 the database now contains 364 entries. Amplification of several additional gene sections, all of which represent promising candidate genes for canine cryptorchidism, is under establishment for downstream Nanopore sequencing.

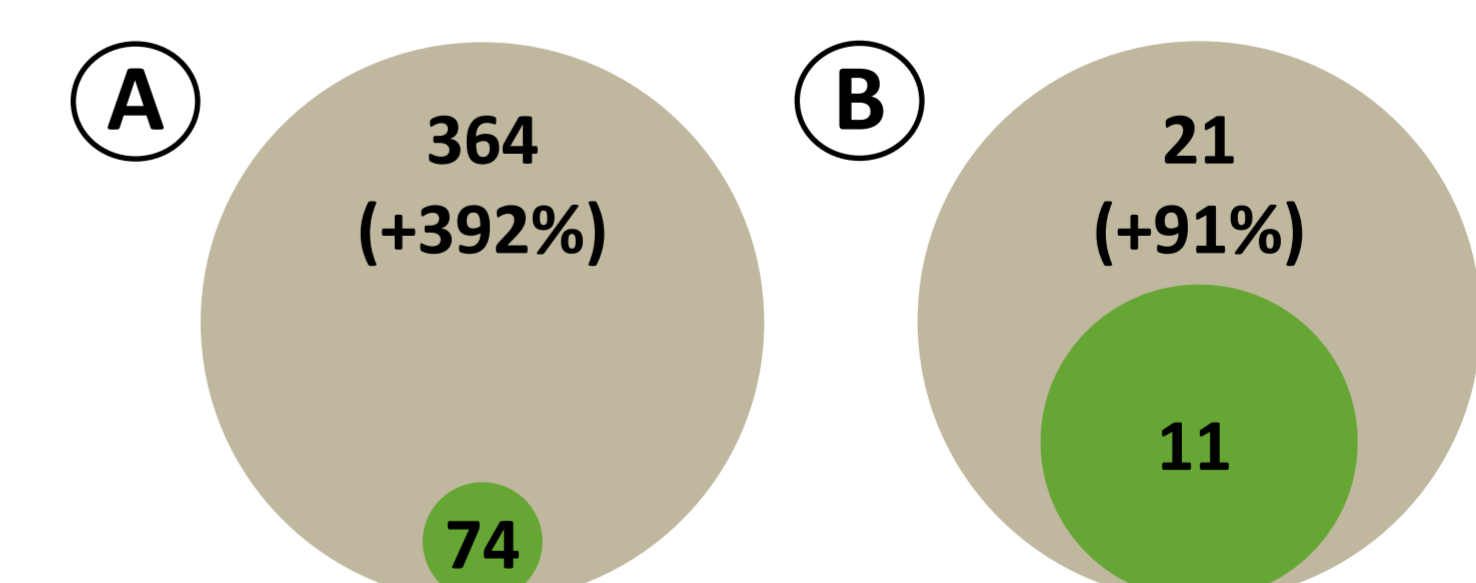


Figure 5: Entry comparison before (green) and after the update (beige) of a) all data and b) dog associated data

## REFERENCES

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