

# NEW ADVANCES IN ESTIMATING THE AGE OF PUPPIES FOR MEDICO-LEGAL PURPOSES

## BACKGROUND

Age determination of puppies represents a significant issue of animal welfare and forensic medicine, particularly for what concerns trade and imports of dogs. Despite the movement of puppy dogs before the age of three months is forbidden by Regulation (EU) No 576/2013, the occurrence of illegal transport of puppies younger than this age is not uncommon. The imprecision and inaccuracy of the currently available methods for estimating age in veterinary medicine (such as teeth examination and the determination of skeletal maturity) make them poorly convincing in legal proceedings. The reasons for such vagueness are to be ascribed both to the lack of standardization of these techniques and to the many variability factors (size, breed, sex, bloodline, diet, etc.) which influence the examined biological phenomena.

## AIM OF THE STUDY

The aim of this study is to obtain data on dental and skeletal development of dogs of different breeds and to determine the correlation between chronological age and biological age assessed with these parameters through statistical analysis.

## MATERIALS AND METHODS

One hundred puppies of different size and breed, owned by private breeders, will be examined. For each puppy, weight, clinical status and dental development will be recorded every two weeks from the fourth to the twentieth week of age. Limbs x-rays for the assessment of skeletal development will be also performed every two weeks from the sixth to the sixteenth week of age.

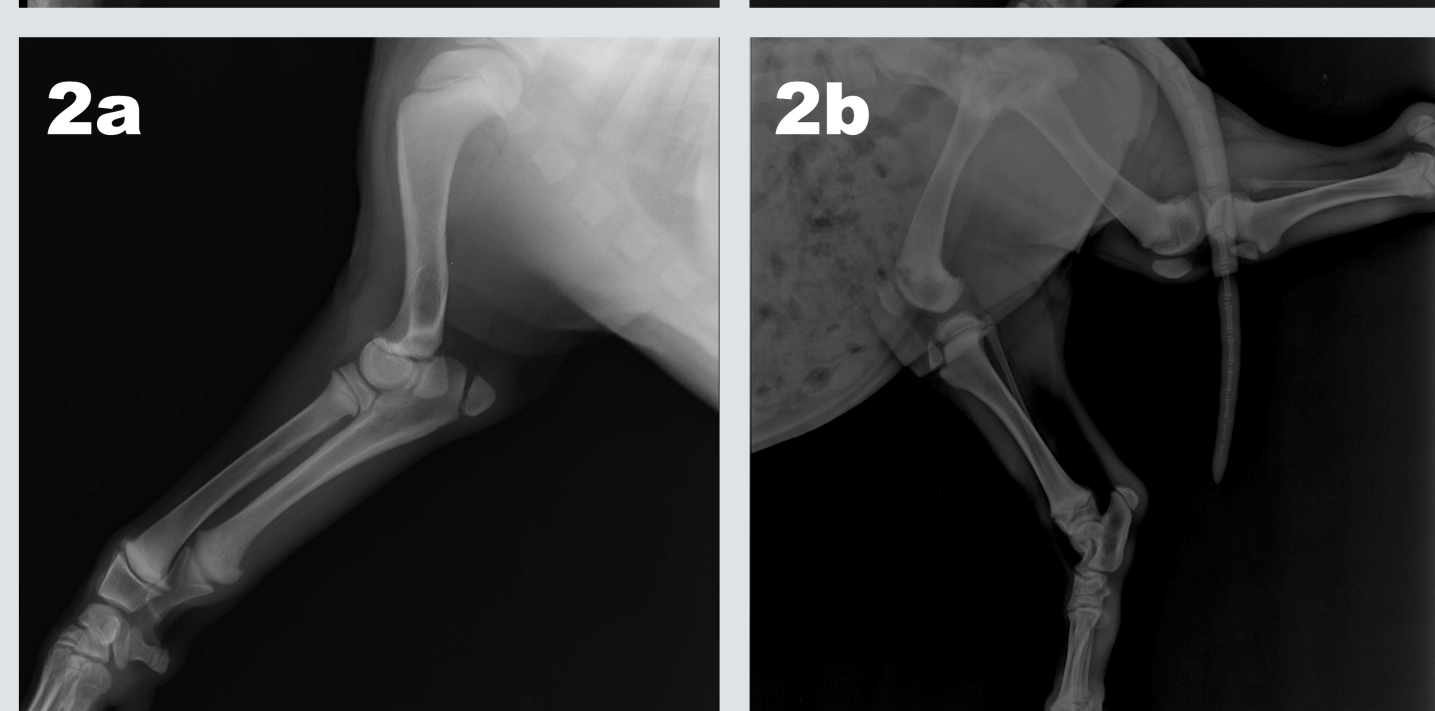
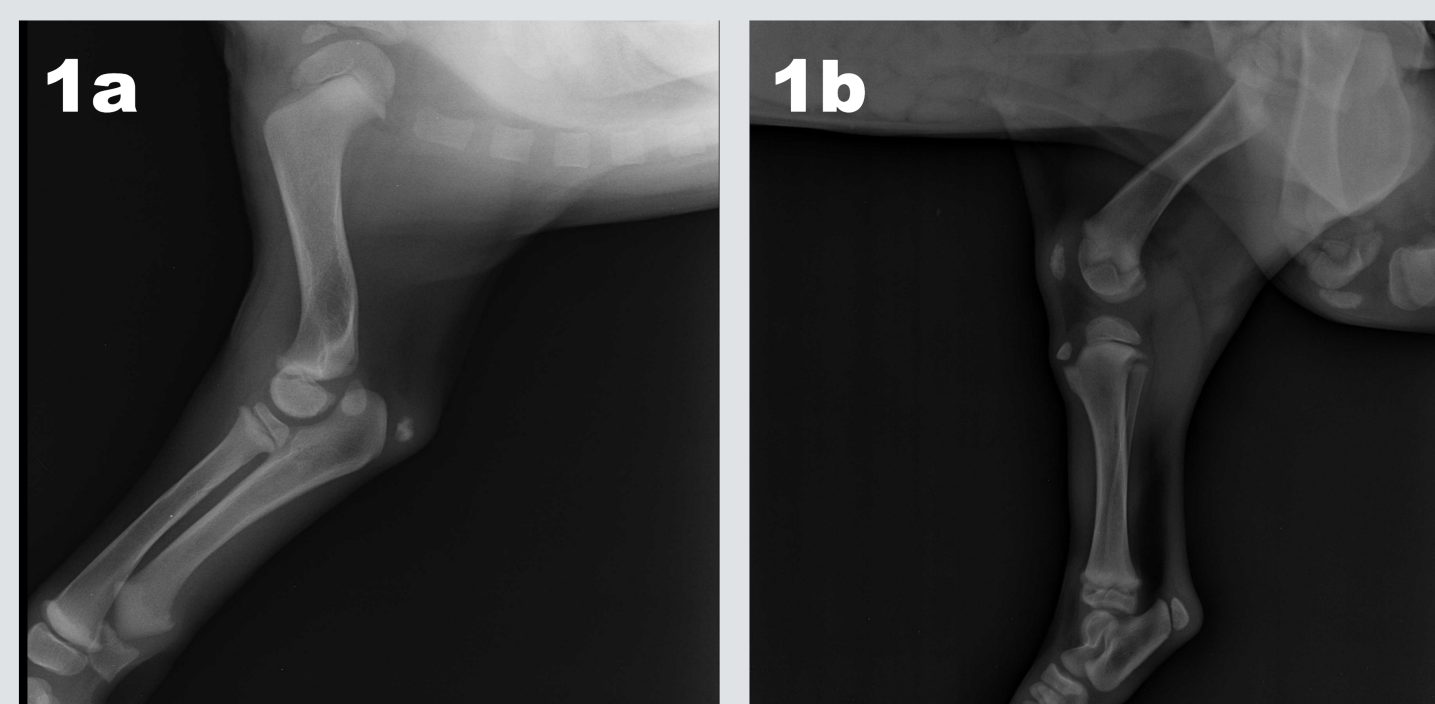
## PRELIMINARY RESULTS

Data collection is currently underway and 86 puppies of 10 different breeds have already been examined.

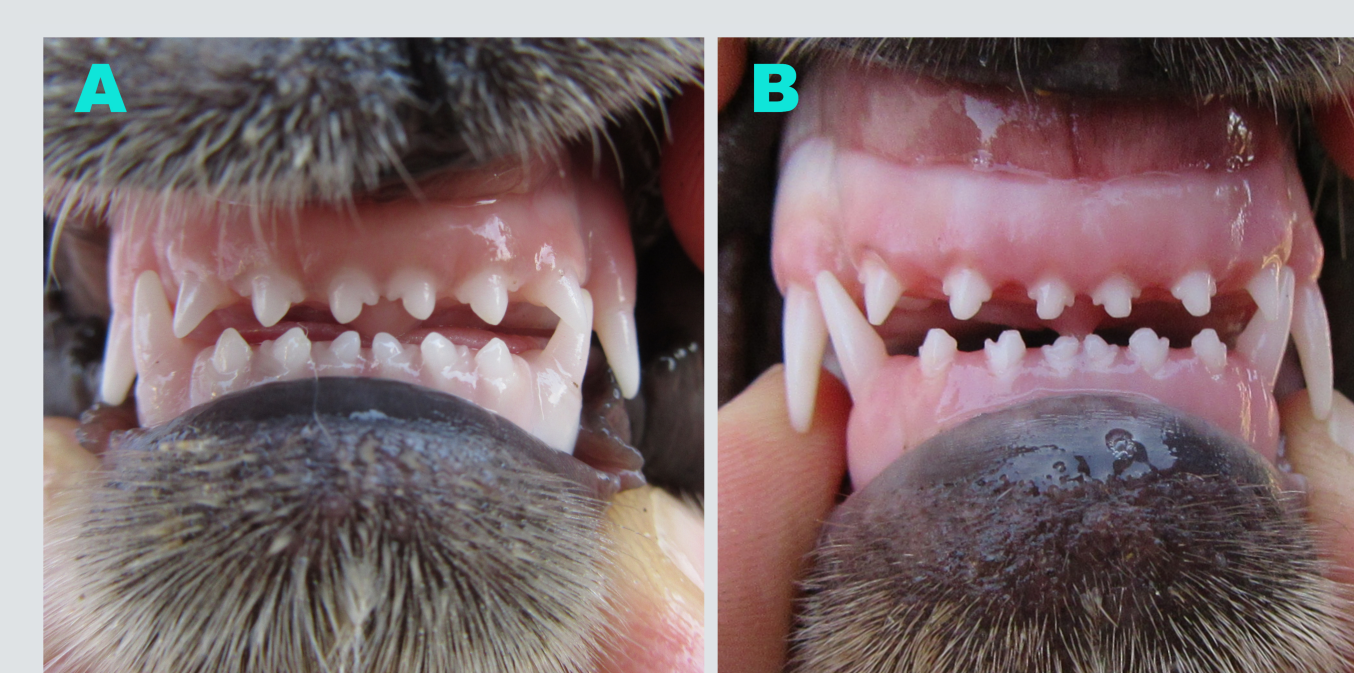
Breed	N. of puppies
Australian Shepherd	8
Berger Blanc Suisse	11
Boxer	10
French Bulldog	9
German Shepherd	2
Labrador	15
Nova Scotia Duck Tolling Retriever	10
Pomeranian	7
Saarloos Wolfdog	12
Toy poodle	2

Teeth examination showed a clear variability of eruption times between small breeds and large breeds, the former showing a delayed teeth eruption, consistently with the scientific literature. Similar variability was found in the permanent teeth eruption times. A less marked difference was observed between puppies of the same breed but different bloodlines.

Developmental anomalies can also alter the dentition phenomena and teeth consumption. The anomalies we recorded include marked prognathism in French Bulldogs and Boxers, mandibular micrognathia in a Labrador, a Nova Scotia Duck Tolling Retriever and a Berger Blanc Suisse, polydontia in Boxers and a missing tooth in a Berger Blanc Suisse puppy. More than two hundred x-rays are in the process of being examined.



**Right fore (a) and hind (b) limb x-rays:** Berger Blanc Suisse at 8 weeks of age (1) and 12 weeks of age (2).



**Teeth eruption or consumption?** 4-week-old (A) vs 10-week-old (B) Labrador.



**Teeth eruption at 4 weeks of age:** A. Pomeranian; B. Toy poodle; C. French Bulldog; D. Australian Shepherd; E. Boxer; F. Labrador; G. Saarloos Wolfdog; H. Berger Blanc Suisse; I. German Shepherd.



**Developmental anomalies:** A. 10-week-old Labrador with mandibular micrognathia; B. 4-month-old Boxer with polydontia; C. 6-week-old Berger Blanc Suisse with a missing tooth.

### PAPERS:

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- Gallina L., Savini F., Lavazza A., Di Marco P., Puleio R., Roccaro M., Purpari G., Guercio A., Scagliarini A. (2017) "Bovine papillomatosis in Sicily: virus identification, diagnosis and co-infections." Large Animal Review, 23;5:171-174.
- Scacco G., Rambaldi A. M., Roccaro M., Peli A., Drögemüller C., Gentile A. (2017) "Bilateral convergent strabismus with exophthalmos in cattle - what do we know?". Large Animal Review, 23;2:67-71.

