

Belgian breeds

Belgian Blue Cattle



Pietrain pig



Belgian Texel Sheep



Ardennaise Poultry breed



Ardennes Horse



Belgian Blue



When one is interested in the history of the Belgian Blue cattle, one naturally comes across the names of the breeders, most of them from the province of Liège, who were at the base of the selection that led to the appearance of a large number of hyper-muscled animals, multiplied and popularized rapidly from the artificial insemination centers, created in Belgium after the second world war.

According to Jean Marcourt (1996), the bull Gédéon, son of Deluré du Vieux Château de Maurenne, arrived at the artificial insemination center of Loncin on February 1956; the bull weighed exactly 400 kg at one year of age, stayed at Loncin until he was 10 years old and reached a weight of 1350 kg. Gédéon is considered by specialists to be the animal with two copies of the gene responsible for the muscular hypertrophy discussed below.

In 1973, the Middle and Upper Belgian cattle breed became Belgian Blue cattle. Hanset (1972) illustrated the evolution of the meaty trait called "culard" in the population of the Walloon provinces indicating that the frequency of hypermuscularity had increased rapidly.

The Belgian Blue has its origins in the Shorthorn breed, which originated in County Durham, in the North East of England. Despite its name, the Belgian Blue is characterized by a coat color polymorphism dominated by three distinct phenotype types: black spotted, blue spotted and white animals (Charlier et al. (1996)). In reality coat color is under the influence of a single autosomal locus, the roan locus, characterized by a pair of codominant alleles: $r+$ (black) and R (white), with heterozygous animals having black and white hairs interspersed, leading to the breed-typical "blue" phenotype hence the name Belgian White and Blue (Charlier et al. (1996)). Prior to molecular testing, the inheritance of muscle hypertrophy was studied in an experiment where F1 (Belgian Blue X Friesian) cows were backcrossed to BBB bulls. These studies led to the involvement of a major gene (mh) behaving as a partially recessive gene, the heterozygote being close to the normal homozygote Hanset and Michaux (1985).

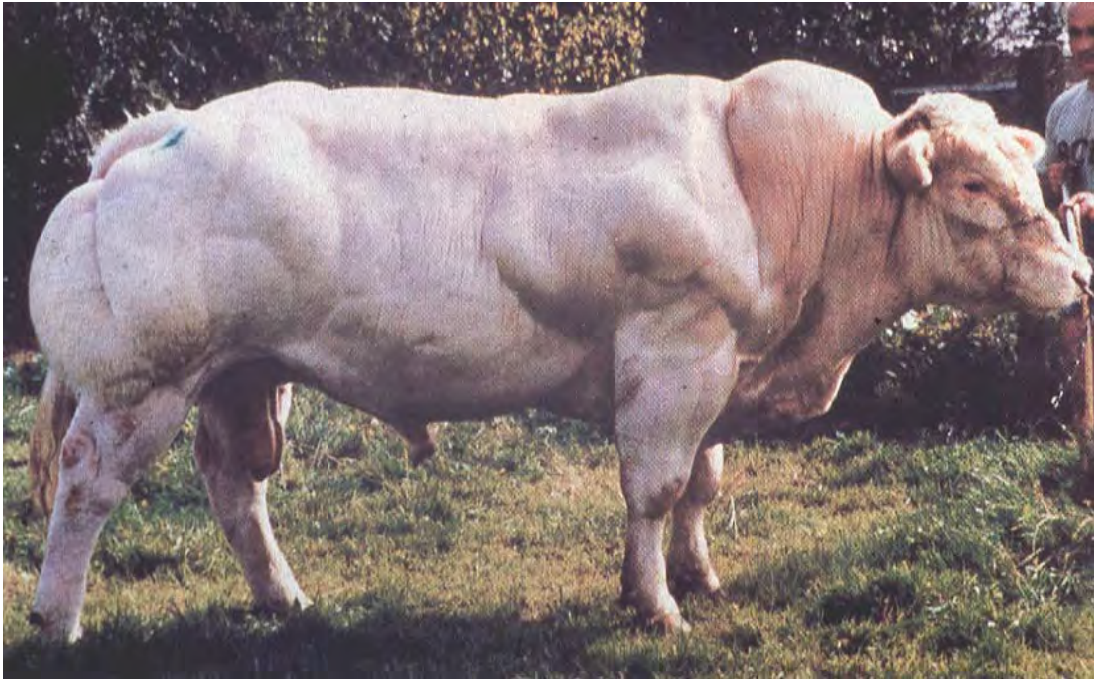
Charlier et al (1995) confirmed the monogenic model involving a locus called " mh " (for muscular hypertrophy), an autosomal locus characterized by a wild-type "+" allele and a recessive " mh " allele, causing the double-muscle phenotype in the homozygote.

Grobet et al (1997) demonstrated that this was the inactivation of the "myostatin" gene, leading to the appearance of a greater number of muscle fibers and hence the muscle hyperplasia responsible for the "double muscle" phenotype.

Belgian Blue females are precocious and reach puberty earlier than females of other meat breeds. The average age at first calving is 29-30 months. However, in many farm herds, heifers calve at 24 months. In this case, they must be fed intensively until calving. The adult weight of the bulls varies between 1,100 and 1,250 kg with a height at the withers of about 1.45 to 1.50 m. However, it is not uncommon to find bulls weighing over 1,300 kg.

The average weight of adult cows at the beginning of gestation is 700 to 750 kg with a height at the withers of 132 to 134 cm. Some cows reach a weight of 850 to 900 kg and a height of more than 140 cm.

Belgian Blue cattle



Belgian Blue cattle



Belgian Blue cattle



7th rib

Copyright nutrition



Filet



Piétrain Pig







Texel Double Muscled Belgian sheep

In the ovine species, the Walloon **Texel culards** are also well known. They present a killing out percentage higher than 52% in average, with a high percentage of meat and little fat. These sheep are rather unique and usable in terminal cross with ewes of prolific maternal lines. This type is largely used, in particular in England.

Some positive terminal cross tests of this type have already been done in 2002 in Morocco with local breed (D'Man and Timahdite). The results show more meat, less fat, less bone and a higher killing out percentage. Three Belgian rams were then transferred to Morocco in 2003 in order to confirm the results and expand the trial.



Ardennes Poultry
Slow growing black legs poultry



Results of Belgian Blue Bulls used in crossbreeding with Zebu Nelore cattle in Brazil

Zebu Nelore (Brazil)



Aladin, Belgian Blue x Nelore, 1240 Kg at 39 month

Results of Belgian Blue Bulls used in crossbreeding with local cattle in Indonesia

Belgian Blue White x Zebu Brahman in Indonesia

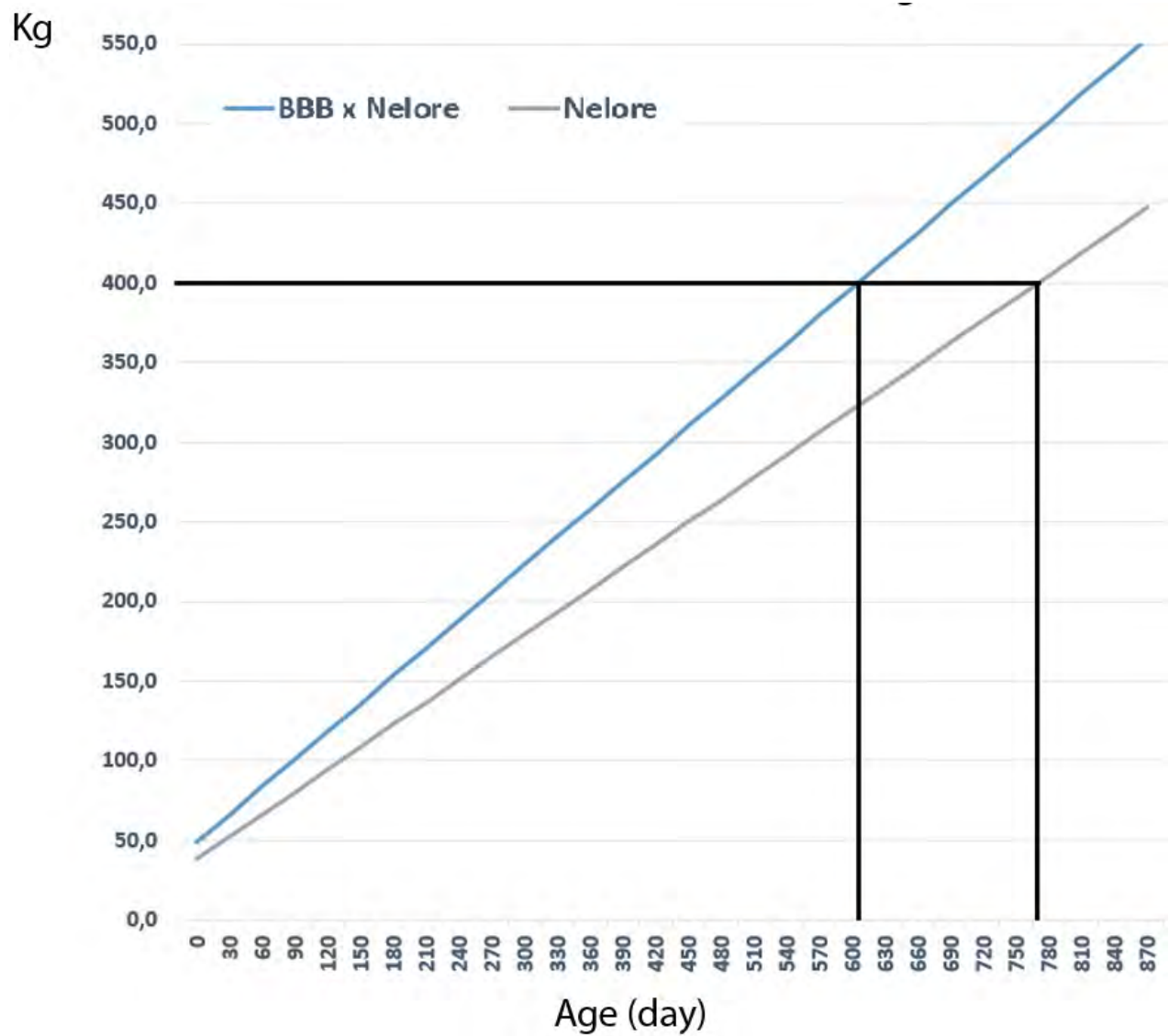


Variable	Breed	Age (day)			
		0	60	120	180
Body weight (kg)					
	BBBxBX	32.17±5.17	78.19±10.67 ^a	115.81±15.61 ^b	164.71±20.77 ^c
	WagyuxBX	29.15±10.95	67.19±6.85 ^b	104.55±11.44 ^b	141.60±11.32 ^b
	BXxBX	28.20±6.52	56.23±10.45 ^c	76.99±16.31 ^a	98.42±19.94 ^a
Body length (cm)					
	BBBxBX	63.50±3.90	69.64±4.37 ^a	82.02±4.34 ^b	89.91±3.57 ^b
	WagyuxBX	59.31±9.61	71.53±4.92 ^b	79.28±7.80 ^{ab}	89.73±10.03 ^b
	BXxBX	58.93±6.43	64.31±5.31 ^a	74.21±7.39 ^a	79.20±6.87 ^a
Withers height (cm)					
	BBBxBX	69.38±3.77 ^a	81.05±3.65	91.24±3.59	99.87±4.02 ^c
	WagyuxBX	70.00±6.95 ^{ab}	82.17±2.75	90.97±6.64	94.99±7.70 ^{ab}
	BXxBX	73.87±4.73 ^b	81.39±3.61	88.25±4.29	92.30±4.20 ^a
Heart girth (cm)					
	BBBxBX	72.08±4.38	99.85±6.97 ^a	113.37±6.86 ^c	128.42±6.73 ^c
	WagyuxBX	71.54±8.66	91.83±3.29 ^a	104.88±6.66 ^b	114.85±6.79 ^b
	BXxBX	74.67±6.80	89.64±6.07 ^a	96.12±7.09 ^a	103.24±5.66 ^a

Variable	Breed	Age (60 days)			
		1 st	2 nd	3 rd	total
Body weight (kg/day)					
	BBBxBX	0.77±0.22 ^c	0.63±0.11 ^b	0.82±0.16 ^a	0.74±0.13 ^a
	WagyuxBX	0.63±0.17 ^b	0.62±0.22 ^b	0.62±0.15 ^b	0.62±0.06 ^b
	BXxBX	0.47±0.17 ^a	0.35±0.13 ^a	0.36±0.16 ^a	0.39±0.11 ^a
Body length (cm/day)					
	BBBxBX	0.10±0.12 ^a	0.21±0.06	0.13±0.04 ^{bc}	0.15±0.03 ^b
	WagyuxBX	0.20±0.13 ^b	0.13±0.12	0.17±0.10 ^b	0.17±0.03 ^b
	BXxBX	0.09±0.07 ^a	0.17±0.13	0.08±0.08 ^a	0.11±0.03 ^a
Withers height (cm/day)					
	BBBxBX	0.21±0.08 ^b	0.17±0.05 ^c	0.14±0.03 ^c	0.18±0.02 ^c
	WagyuxBX	0.20±0.08 ^{bc}	0.15±0.08 ^{ab}	0.07±0.07 ^a	0.14±0.02 ^b
	BXxBX	0.13±0.04 ^a	0.11±0.05 ^a	0.07±0.04 ^a	0.10±0.02 ^a
Heart girth (cm/day)					
	BBBxBX	0.47±0.15 ^c	0.23±0.05 ^c	0.25±0.04 ^c	0.32±0.05 ^c
	WagyuxBX	0.34±0.11 ^a	0.22±0.09 ^b	0.17±0.06 ^a	0.24±0.03 ^b
	BXxBX	0.25±0.08 ^a	0.11±0.06 ^a	0.12±0.08 ^a	0.16±0.03 ^a



Nelore Zebu cattle - Brazil



Brahman x Belgian Blue in Colombia



**Belgian Blue Bull Intrepide de Cras Avernas
Father of Isi**



**Zebu Brahman Cow
Mother of Isi**



Isi Belgian Bue x Zebu Brahman calf



Isi 270 Kg at 7 month



Isi 640 Kg at 20 month

Belgian Blue x Brahman cross in Indonesia



Growth of calf N°6



Growth of calf N°6



Growth of animal N°6 - 750 Kg at 3 years



Results of Belgian Blue Bulls used in crossbreeding with local cattle in Burkina Faso

Belgian Blue White x Zebu Azawak in Burkina Faso

The first F1 product BBB x Zebu Azawak is born on 04/12/2002. This animal was maintained and fed under normal local conditions. At 4 months old, his weight was already 135 kg. This is quite exceptional as this weight is the one for local animals at 18 months old!



Results of Belgian Blue Bulls used in crossbreeding with local cattle in Senegal

Belgian Blue White x Zebu Gobra in Senegal

Farms : Niacoulrab, Wayembam, and Abdou Ndiaye, SENEGAL



8 month



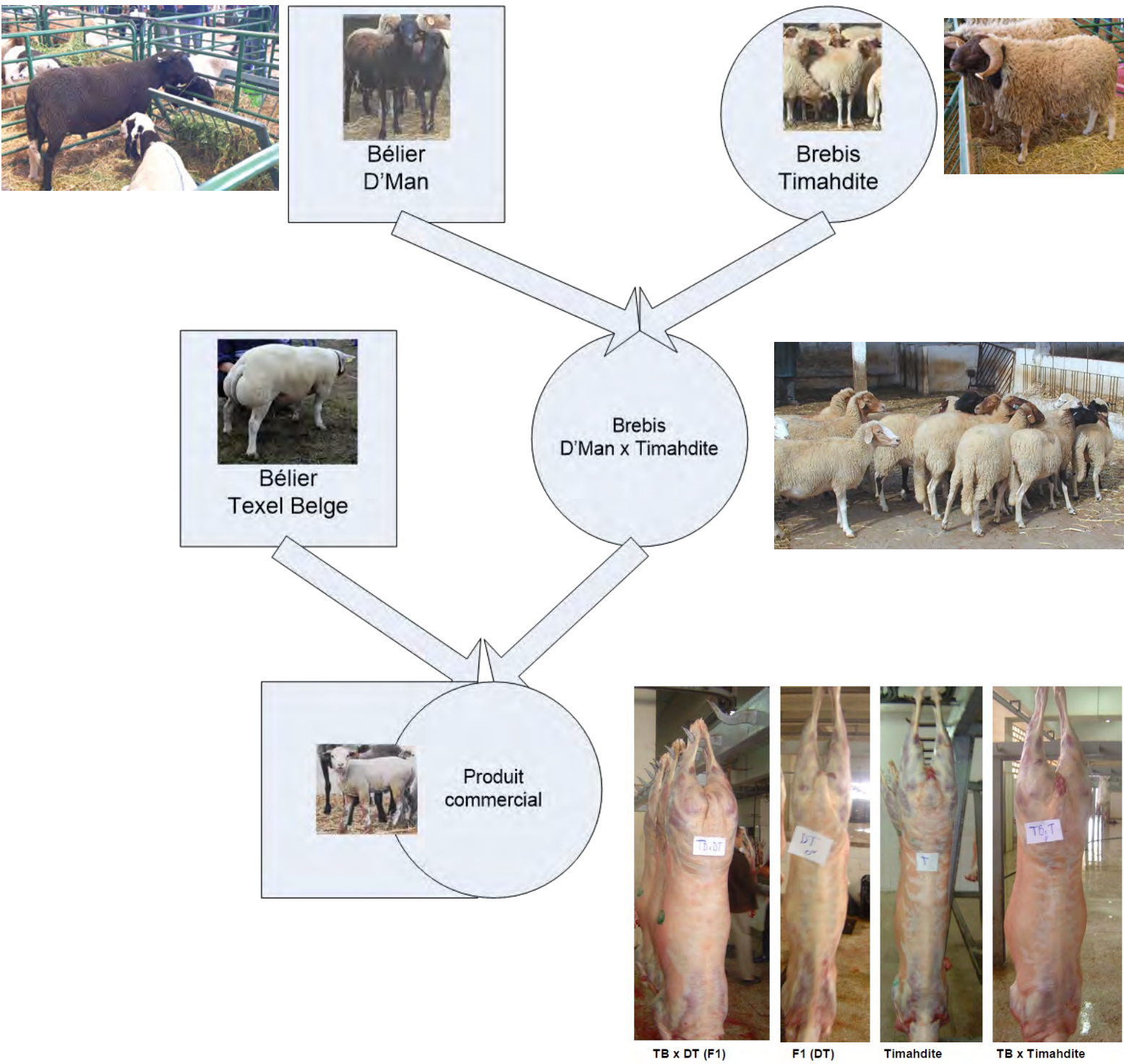
15 month

(Photos Dr Bagoré Bathily)

Some results

Identity	Date of birth	Age (month)	Breed	Sex	Weight (Kg)	Thoracic perimeter (cm)	Height at withers (cm)
Wayembam	01/12/98	8	BBB x Zebu	M	202	133	104
Wayembam	01/12/98	15	BBB x Zebu	M	509	Slaughtered at 15 months 350 Kg of carcass with a killing out of 68%	

Belgian Double Muscled Texel in crossbreeding with D'Man x Timahdite sheep in Morocco (3-Way cross)



Source of variation	N	Fertility (%)	LSB (lambs)	LWB (kg)	LSW (lambs)	LWW (kg)
Genotype	388	*	***	***	***	***
D'man (D)	27	85±6	1.99±0.10	4.88±0.28	1.12±0.11	22.02±1.60
Timahdite (T)	75	94±3	1.15±0.05	4.14±0.15	1.06±0.06	23.21±0.78
D x T	138	99±3	1.20±0.04	4.42±0.11	1.14±0.04	24.68±0.59
Texel x D	22	88±6	1.88±0.11	5.46±0.30	1.46±0.12	28.66±1.61
Texel x T	67	81±4	1.18±0.06	5.00±0.17	1.14±0.07	28.19±0.91
Texel x DT	59	85±4	1.79±0.07	5.86±0.20	1.55±0.08	30.82±1.05

LSB – Litter size at birth
 LSW – Litter size at weaning
 LWB – Litter weight at birth
 LWW – Litter weight at weaning (90 days)

Research team

Academic staff



Prof. Dr ANTOINE-MOUSSIAUX Nicolas

DVM, PhD

Tel: +32 4 366 41 42

Email: nantoine@uliege.be



Prof. Dr DETILLEUX Johann

DVM, PhD

Tel: +32 4 366 42 15

Email: jdetilleux@uliege.be



Prof. Dr Ir FARNIR Frédéric

Ir, PhD

Tel: +32 4 366 41 28

Email: f.farnir@uliege.be



Prof. Dr LEROY Pascal

DVM, PhD

Tel: +32 475 43 41 20

Email: pascal.leroy@uliege.be



Prof. Dr MICHAUX Charles

DVM, PhD

Tel: +32 4 366 41 21

Email: charles.michaux@uliege.be



Dr MOULA Nassim

DVM, PhD

Tel: +32 4 366 41 24

Email: nassim.moula@uliege.be



Dr BAISE Etienne

Dr Sc, PhD

Tel: +32 4 366 41 23

Email: etienne.baise@uliege.be

Address

Faculty of Veterinary Medicine, University of Liege
20 Boulevard de Colonster (B43), 4000 Liège, Belgium

Contact

Tel: +32 4 366 41 21
Fax: +32 4 366 41 22