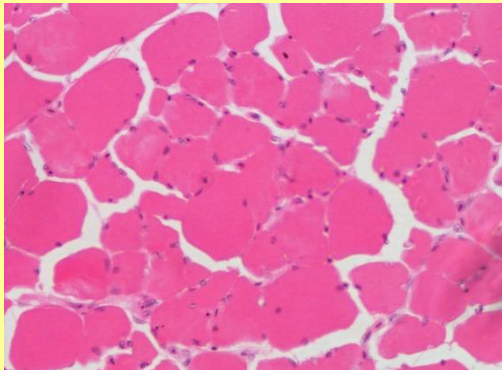
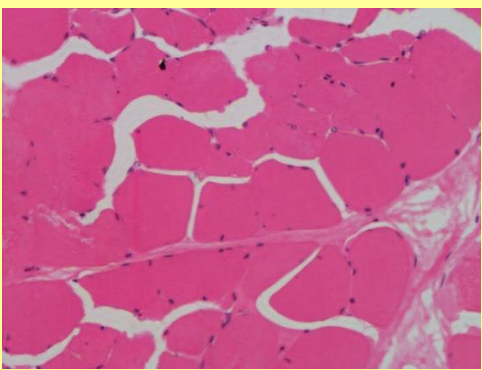


# Histological structure of the Pekin and Muscovy duck muscles depending on rearing system

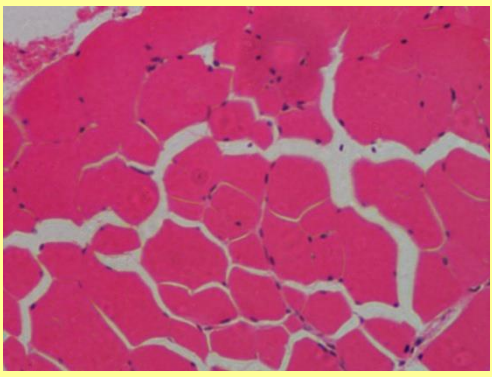
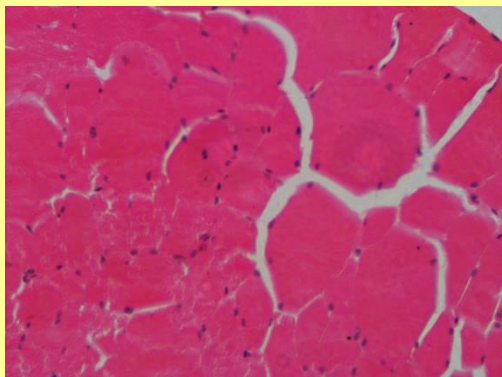
Tomasz Szara<sup>1</sup>, Krzysztof Damaziak<sup>2</sup>, Monika Michalczuk<sup>1</sup>, Katarzyna Olbrych<sup>2</sup>  
<sup>1</sup> Department of Morphological Sciences, Faculty of Veterinary Medicine,  
<sup>2</sup> Departent of Animal Breeding and Production, Fcultyof Animal Science  
Warsaw University of Life Sciences – SGGW, Poland

The study was conducted on two lines of ducks: Muscovy R71 and Pekin P44. Up to 3 weeks of age all birds were kept according the assumptions of intensive rearing. From 3 weeks af age until the end of rearing half of each genetic group had the opportunity to free range exercise. 12 males and 12 females of average body weight from each group were selected. Ducks were killed using an electrical waterbath stunner. Histological samples of right pectoralis superficialis and biceps femoris muscles were taken immediately after slaughtering. Cutting was performed perpendicular to the muscle fibers to get the blocks measuring 1 x 1 x 1 cm3. Specimens were fixed in Bouin's fluid (24 h) and embedded in paraffin blocks. The preparations were cut transversely into slices of 5 mm with a Leica microtome semi RM 2265, and then dried at 37 ° C for 24 h. The standard H & E staining was performed. Images were achieved using the Nikon optical microscope. Diameter (microns) and surface area (µm2) 300 randomly selected muscle fibers of each examined muscle were measured.

Larger diameter of muscle fibers in both sexes of ducks P44 ( $P \leq 0.01$ ) and both sexes of ducks MR71 ( $P \leq 0.05$ ) was observed in free range birds. The differences of the surface area of the muscle fibers were greater in the biceps femoris, particularly in males, where it was confirmed statistically (MR71 with  $P \leq 0.01$ ; P44 at  $P \leq 0.05$ ). Greater variations the surface area of biceps femoris muscle fibers may therefore due to the fact that this group of muscles in young ducks performs much more intensive work during walking, running and maintain body weight than the pectoralis superficialis muscle.

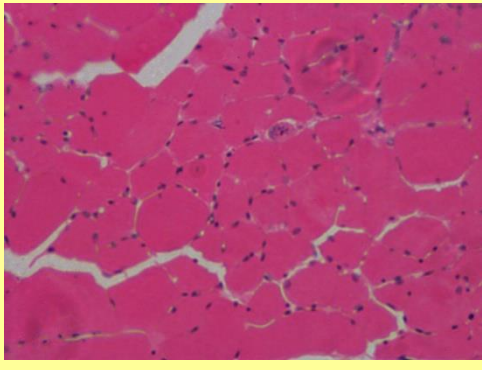
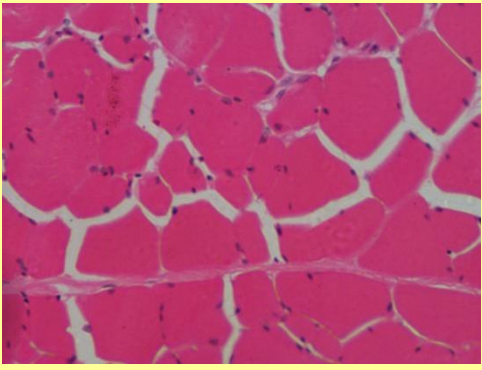


outdoor system      intensive system  
male MR71

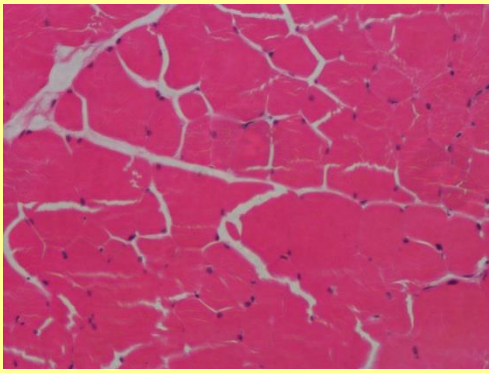
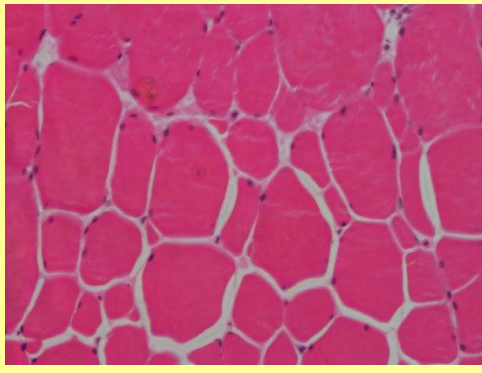


outdoor system      intensive system  
male P44

## Cross-section of *Pectoralis superficialis* muscle



outdoor system      intensive system  
male MR71



outdoor system      intensive system  
male P44

## Cross-section of *Biceps femoris* muscle

<i>Pectoralis superficialis</i> muscle – muscle fibres					<i>Biceps femoris</i> muscle – muscle fibres				
		Male		Female		Male		Female	
Parameter		IS	OS	IS	OS	IS	OS	IS	OS
Diameter	LSM	39.6 <sup>a</sup>	42.6 <sup>a</sup>	34.5 <sup>b</sup>	36.4 <sup>b</sup>	50.0 <sup>a</sup>	54.0 <sup>a</sup>	35.2 <sup>b</sup>	37.8 <sup>b</sup>
	±SE	0.8	0.8	0.7	0.7	1.3	1.2	0.8	0.9
	LSM	1234.6 <sup>b</sup>	1332.6 <sup>b</sup>	878.9	900.6	1113.4 <sup>a</sup>	1329.4 <sup>a</sup>	985.0	1095.3
	±SE	44.6	53.8	37.3	38.3	56.4	58.0	64.2	70.3
Area									
<sup>a, b</sup> – P ≤ 0.01; <sup>a, b</sup> – P ≤ 0.05									
<sup>a</sup> – males; <sup>b, b</sup> – femaes									

MR71

		<i>Pectoralis superficialis</i> muscle – muscle fibres				<i>Biceps femoris</i> muscle – muscle fibres			
		Male		Female		Male		Female	
Parameter		IS	OS	IS	OS	IS	OS	IS	OS
Diameter	LSM	29.2 <sup>A</sup>	32.3 <sup>A</sup>	26.4 <sup>A</sup>	29.5 <sup>A</sup>	41.5	44.0	34.8 <sup>A</sup>	38.3 <sup>A</sup>
	±SE	0.8	0.8	0.7	0.7	1.3	1.2	0.8	0.9
	LSM	719.3	786.2	699.6	733.6	859.5 <sup>b</sup>	905.9 <sup>b</sup>	866.8	894.5
	±SE	44.6	53.8	37.3	38.3	56.4	58.1	64.2	70.3
Area									

P44