RABBIT ANATOMY

RABBIT ANATOMY:

A BRIEF PHOTOGRAPHIC ATLAS AND DISSECTION GUIDE

PART I: MUSCULAR SYSTEM

SOMA MUKHOPADHYAY AND LISA RUGGIERO WAGNER

Disclaimer:

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This Atlas is developed primarily to meet Student Learning Objectives at Augusta University, so every details of Rabbit Anatomy is not presented.

DEDICATION

I would like to dedicate this work to my son, Nilabhra, for all his support and encouragement.

- Soma

I would like to dedicate this work to my dear husband and sons, Tony, Tyler and Jesse for their loving support and encouragement.

- Lisa

AUGUSTA UNIVERSITY

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Soma Mukhopadhyay

Dr Soma Mukhopadhyay is a professor by profession, scientist by training and educator by passion. In her free time she is an elocutionist, singer, poet, writer, script writer, theater actor and producer.

Born in Kolkata (also known as Calcutta), India, Soma started her career as a professor in the United States after finishing her BS and MS in Zoology from University of Calcutta and Ph.D. in Nuclear Medicine from Indian Institute of Chemical Biology and Jadavpur University at Kolkata, India. Her Ph.D. research was in the area of structure and functional relationship on mammalian renal system; objective was to develop an efficient imaging agent (radiopharmaceutical) for diagnostic purpose. She was also part of a pilot clinical study to monitor the efficiency of the radiopharmaceuticals in the human system. During her Post-Doctoral endeavor, she undertook studies to identify and characterize pathways involved in arterial contractility following drug-receptor interaction. She also completed a Professional Certification Program in Biotechnology from University of Cincinnati.

Dr. Mukhopadhyay has been teaching for almost 25 years. She has received four teaching awards and was nominated for three others. Soma received Indian Council of Medical Research's Fellowship for doing her Ph.D. research. Later she received a Fellowship under National Library of Medicine for a Biomedical Informatics program. Soma has been selected for Scholarship of Teaching and Learning Fellowship at Augusta University and a Fellowship from Howard Hughes Medical Institute for pedagogical research under their Faculty Mentoring Network. For decades Dr.Mukhopadhyay has been involved with pedagogical research and for last few years she is working with and guiding undergraduate students in a number of research projects.

Dr Mukhopadhyay's current research focus includes study of molecular genetics of human evolution and significance of the interaction between the Homo neanderthalensis, Denisovans and the Homo sapiens and development of interactive courses on Anatomy, Physiology and Evolution. Academically she is passionate about Art and Anatomy and History of Medicine. Soma has a Degree in Music and got her Diploma in Science Journalism from Calcutta University. She was a radio artist at Kolkata and performed in Pennsylvania Public Radio. Her short stories, poetry, and news communications have been and continue to be published in newspapers and magazines in India and abroad. She is a co-author of a book, "Ekatmo" (One Soul), a Literary Collection of three generations. She writes in both Bengali and English. Her passions include painting, photography, recitation, drama, music and literature.

AUTHOR BIOGRAPHIES

Lisa Ruggiero Wagner

Lisa began her teaching career while she was still in graduate school at Temple University in Philadelphia, Pennsylvania. Lisa took her degree in Microbiology from the Pennsylvania State University and, after raising her sons with her husband in State College, Pennsylvania, decided to pursue agraduate degree with an interdisciplinary approach to health, diseaseand health disparities. Her research focused on upstream disease causation mechanismsof multi-drug resistant (MDR)and extremely drug resistant tuberculosis (XDR-TB). She also holds a Graduate Certification for Teaching in Higher Education from Temple University. This graduate work was focused on excellence in teaching and learning and evidence-based teaching. Inspired by students' capacity for learning, Lisa has been facilitating and encouraging curiosity and inquiry in the lecture hall and lab as a lecturer in Anatomy & Physiology as well as in Biology at Temple University (Philadelphia), Augusta University and Clemson University since 2008. She lives for the learner's "AHA Moment"!

In her off-campus life, Lisa has a wonderful husband and two amazing adult sons. Hiking, cooking and Yoga for fun. Oh...she will always be a Nittany Lion, but she is learning what it is like to be a Clemson Tiger!

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RABBIT MUSCULAR SYSTEM

STUDENT LEARNING OBJECTIVES

Muscles of the Head and Neck

- *Masseter*
- *Digastric*
- *Mylohyoid*
- *Sternomastoid*
- *Sternohyoid*
- *Sternothyroid*

Muscles of the Ventral Thorax and Abdomen

- *Pectoralis major*
- *Pectoralis minor*
- *Serratus ventralis*
- *External abdominal oblique*
- *Internal abdominal oblique*
- *Transverse abdominis*
- *Rectus abdominis*

Muscles of the Back

- *Levator scapulae ventralis*
- *Acromiotrapezius*
- *Spinotrapezius*
- *Latissimus dorsi*
- *Rhomboid minor*
- *Rhomboid major*
- *Rhomboideus capitis*

LEARNING OBJECTIVES

RABBIT MUSCULAR SYSTEM

Muscles of the Shoulder

- *Deltoid*
- *Supraspinatus*
- *Infraspinatus*
- *Teres major*
- *Teres minor*
- *Subscapularis*

Muscles of the Front Leg (Arm)

- *Triceps brachii*
  - *Long head*
  - *Lateral head*
  - *Medial head*
- *Brachialis*
- *Biceps brachii*
- *Epitrochlearis (no equivalent in human)*

Muscles of the Hip and Back Leg

- *Tensor fascia latae*
- *Gluteus medius*
- *Gluteus maximus*
- *Biceps femoris*
- *Semimembranosus*
- *Quadriceps femoris*
- *Rectus femoris*
- *Vastus lateralis*

LEARNING OBJECTIVES

RABBIT MUSCULAR SYSTEM

Muscles of the Hip and Back Leg-continued

- *Vastus intermedius*
- *Vastus medialis*
- *Sartorius*
- *Gracilis*
- *Iliopsoas*
- *Pectineus*
- *Adductor brevis*
- *Adductor longus*
- *Adductor magnus*
- *Gastrocnemius*
- *Soleus*
- *Plantaris*
- *Flexor digitorum longus*
- *Extensor digitorum longus*
- *Tibialis anterior*
- *Fibularis (peroneus)*

Anatomical Position:

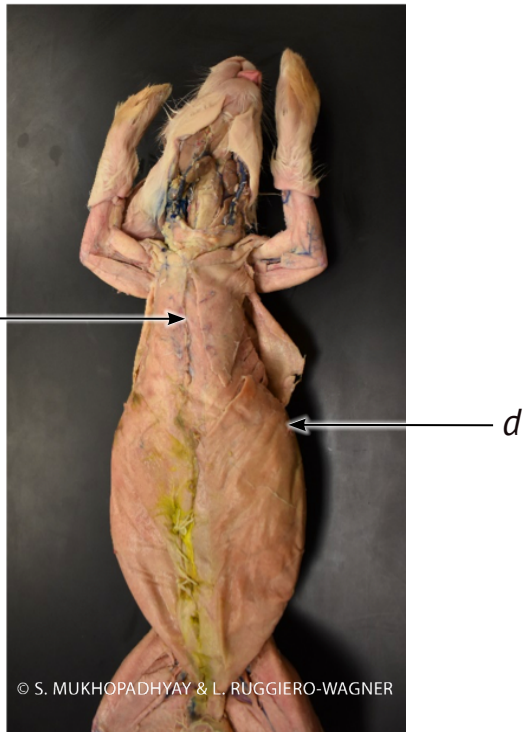
Make sure you know the following anatomical positions to start with the dissection:

a) Anterior or VentralSurface

b) Posterior or DorsalSurface

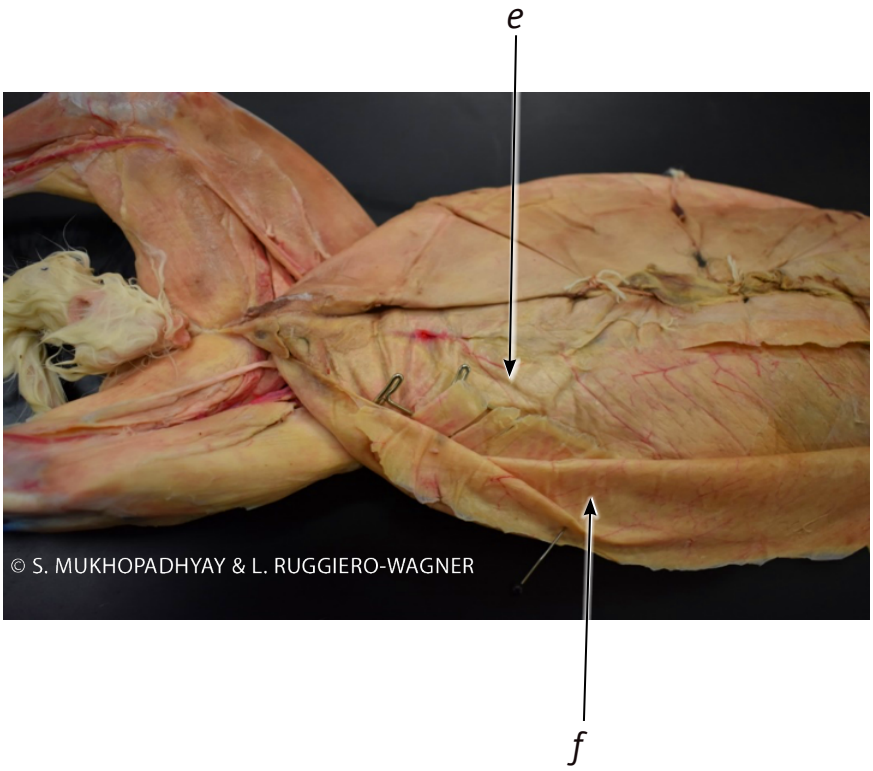
c) Medial-toward the midline

d) Lateral-away from the midline



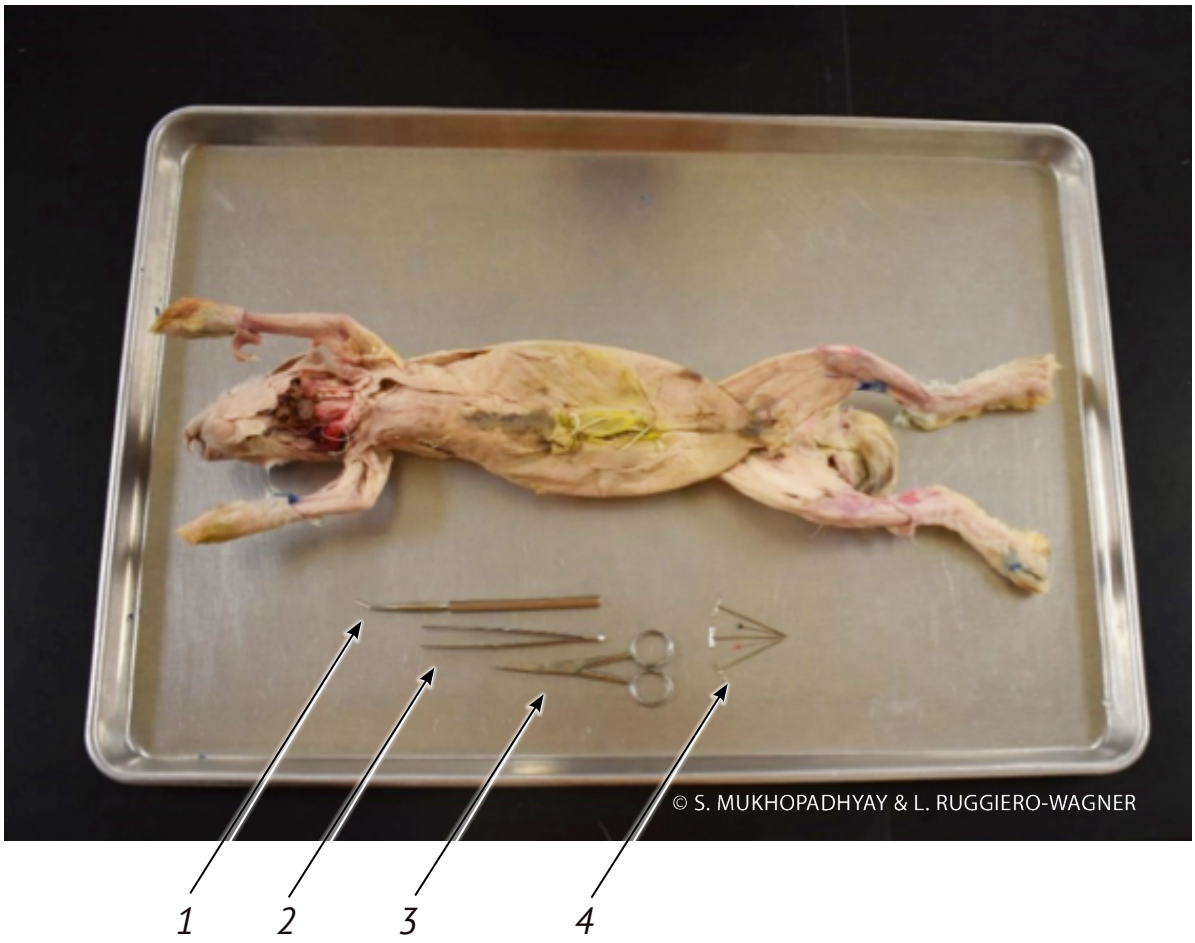
For Muscle Dissection:

*The rabbit specimen should already have the skin and fur removed. However, there may be some remnants of skin, connective and adipose (yellow,fat) tissue that may need to be removed in order to identify and dissect the muscles.Muscles are attached to bones by tendons and arranged in layers[deep **(e)** and superficial **(f)**].*



It may be difficult to see the cleavage (separations) between muscles because of the overlying connective tissue. Use your scissors, blunt probe and fingers to carefully remove as much of the fat and connective tissue as possible.Do not use a scalpel, as it easy to damage the muscles. The muscle will appear as directionally organized fibers.

You will need the following tools for your dissection.



1: Blunt probe
2: Forceps
3: Scissors
4: Pins

Note: After dissection, spray the rabbit with preservative solution and then bag it. Throw away skin, fat and other body parts (if any) in the biohazard container. Clean the tools and the tables with disinfectant solution.

MUSCLES OF THE HEAD AND NECK

Figure 1: Muscles of Head and Neck

LABELS OFF LABELS ON

BACK TO STUDENT LEARNING OBJECTIVES

MUSCLES OF THE THORAX AND ABDOMEN

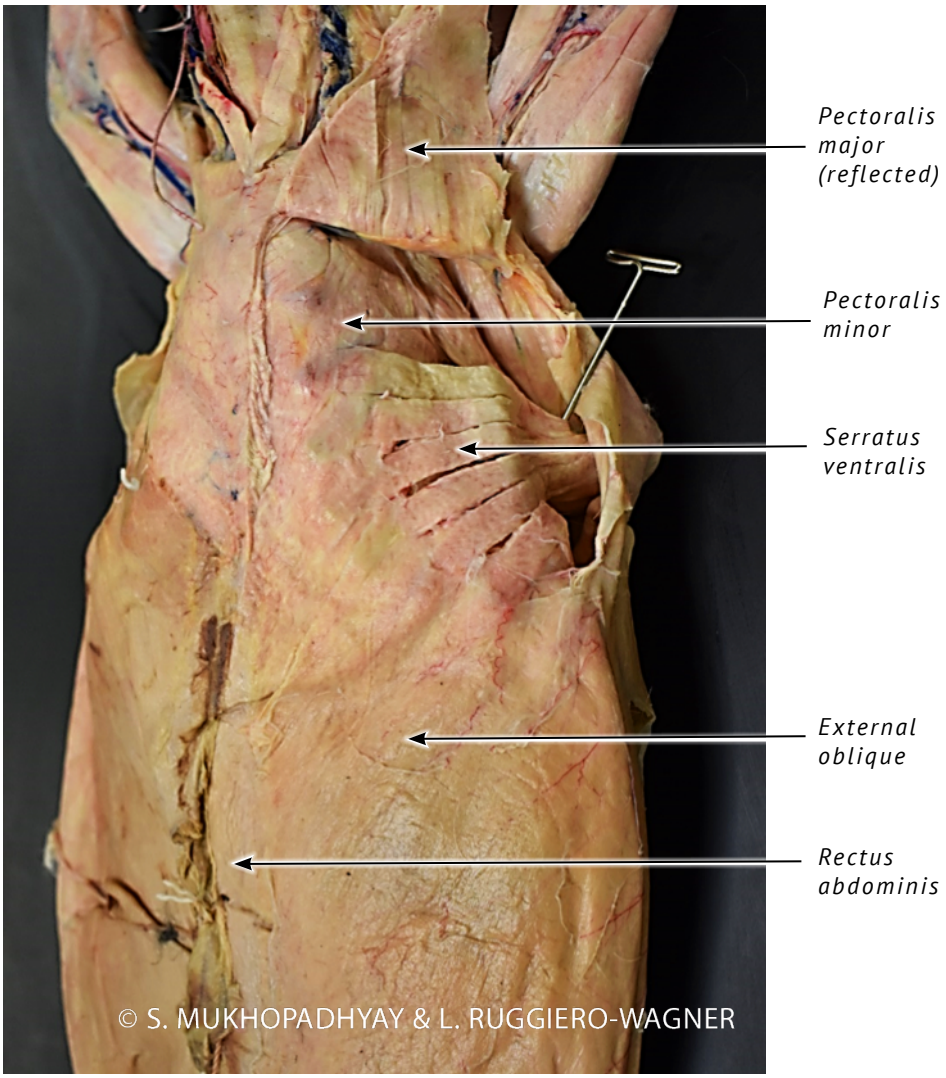


Figure 2a: Muscles of Ventral Thorax (deep) and Abdomen (superficial)

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BACK TO STUDENT LEARNING OBJECTIVES

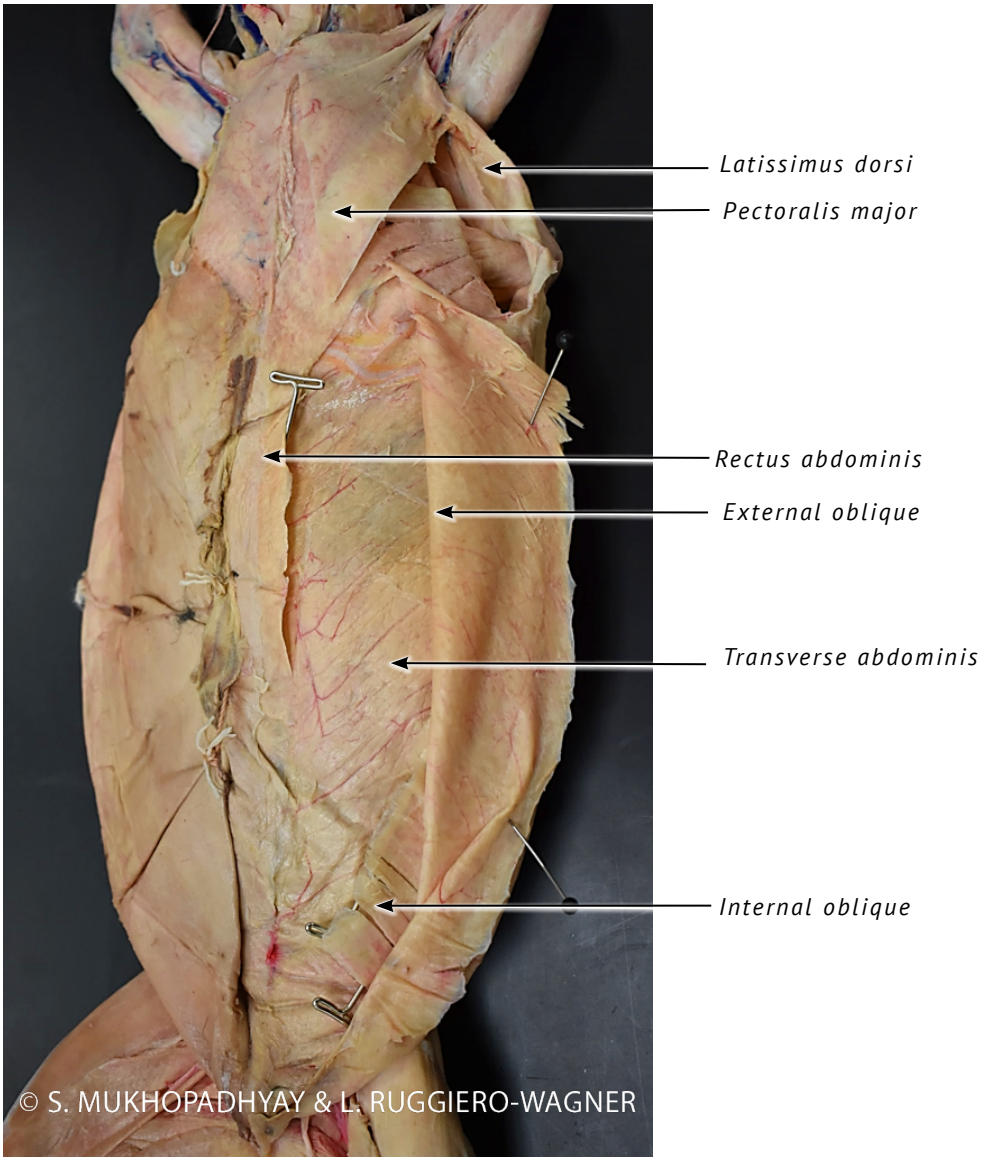

Figure 2b: Muscles of Ventral Thorax (superficial) and Abdomen (deep)

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BACK TO STUDENT LEARNING OBJECTIVES

MUSCLES OF THE BACK

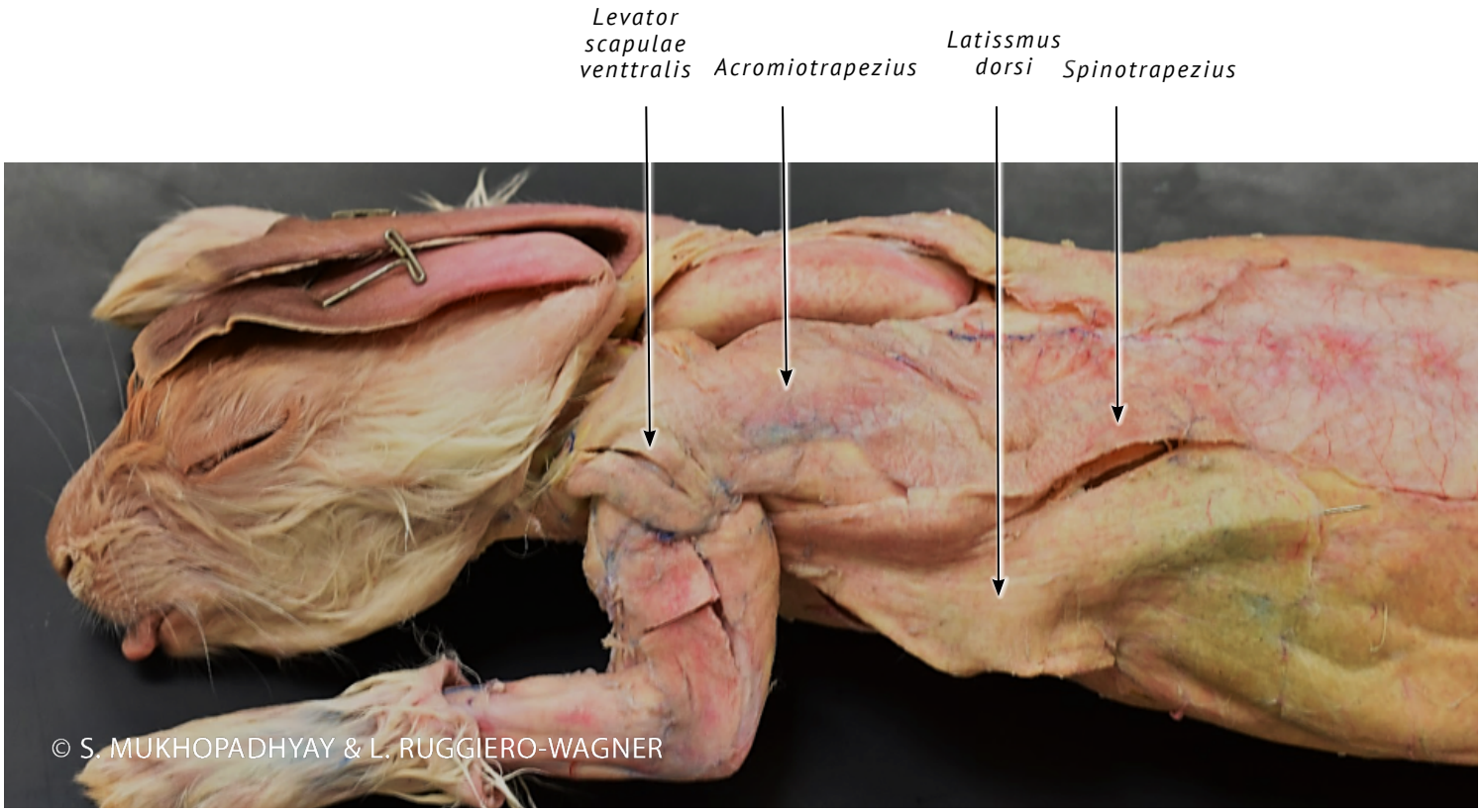

Figure 3a: Muscles of the Back (superficial)

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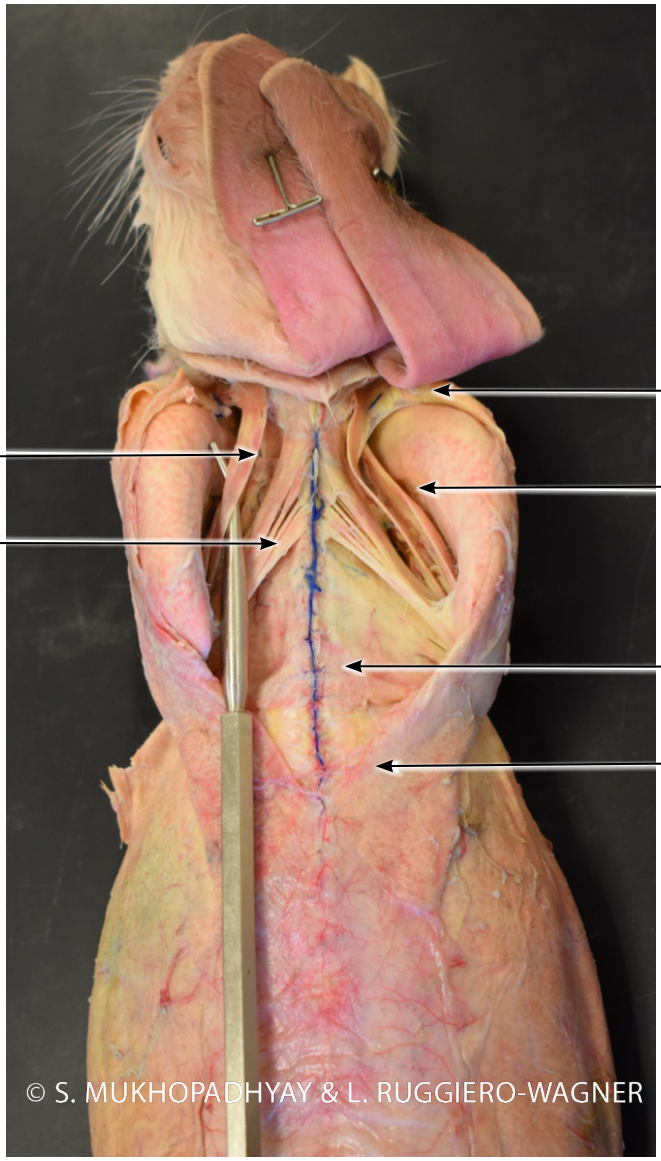

Figure 3b: Muscles of the back (deep)

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BACK TO STUDENT LEARNING OBJECTIVES

MUSCLES OF THE SHOULDER

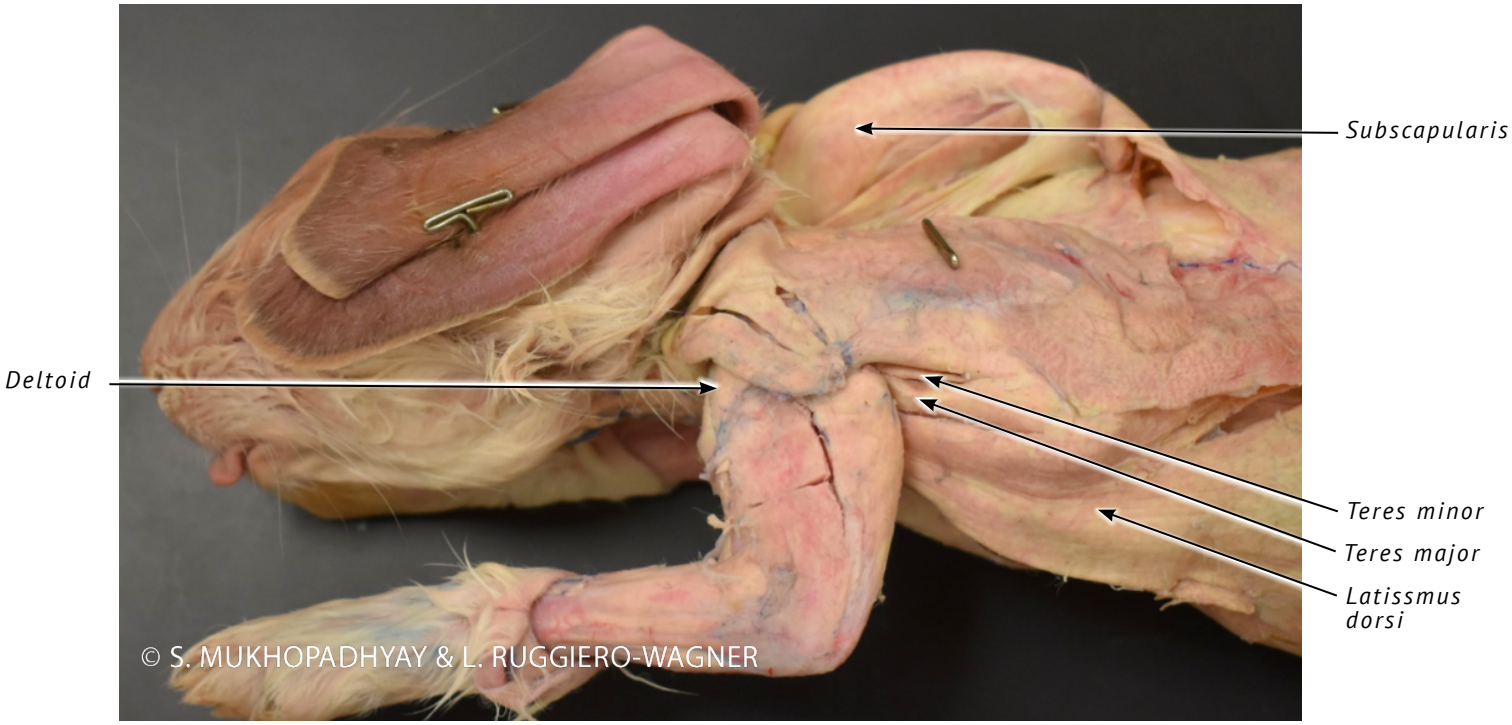

Figure 4a: Muscles of the shoulder (superficial)

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BACK TO STUDENT LEARNING OBJECTIVES

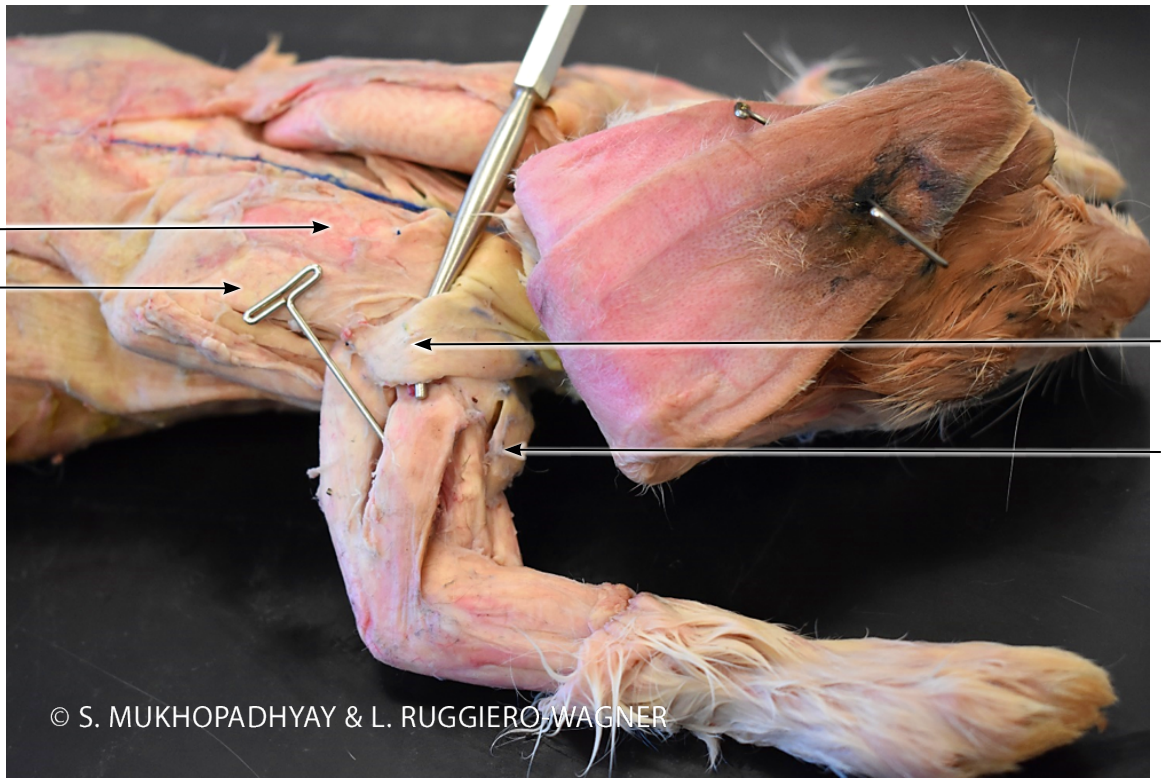

Figure 4b: Muscles of the shoulder

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MUSCLES OF THE FRONT LEG

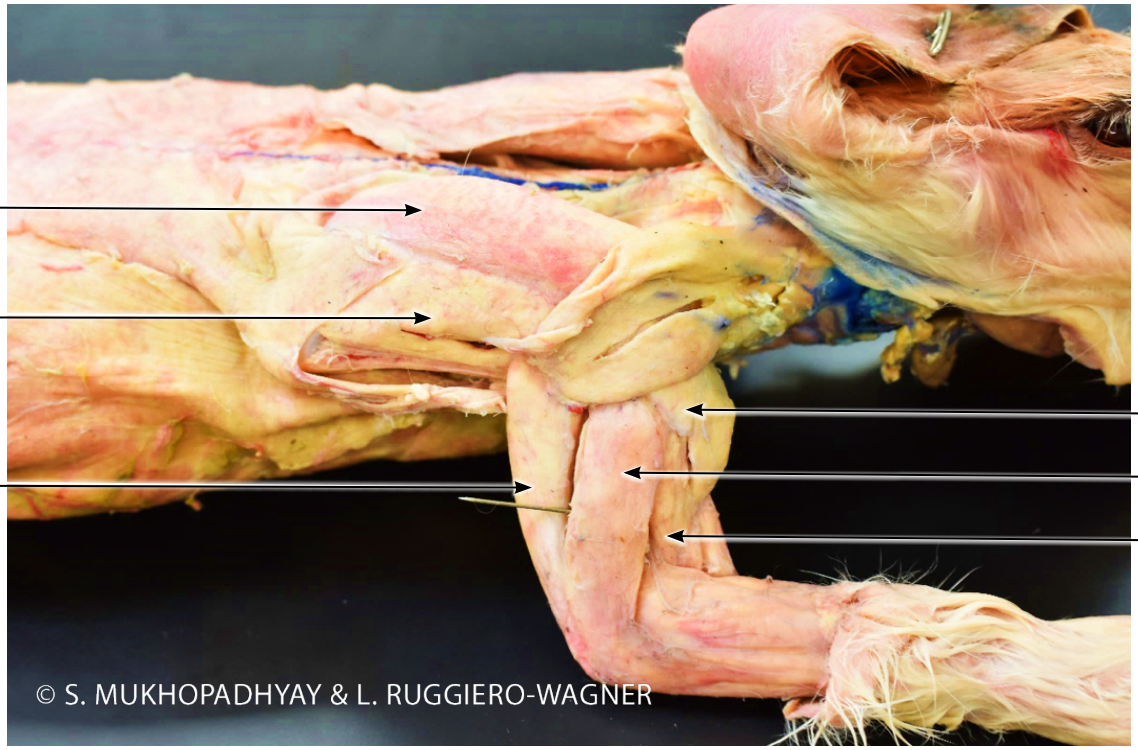

Figure 5a: Muscles of the Front Leg (Arm) - Dorsal View

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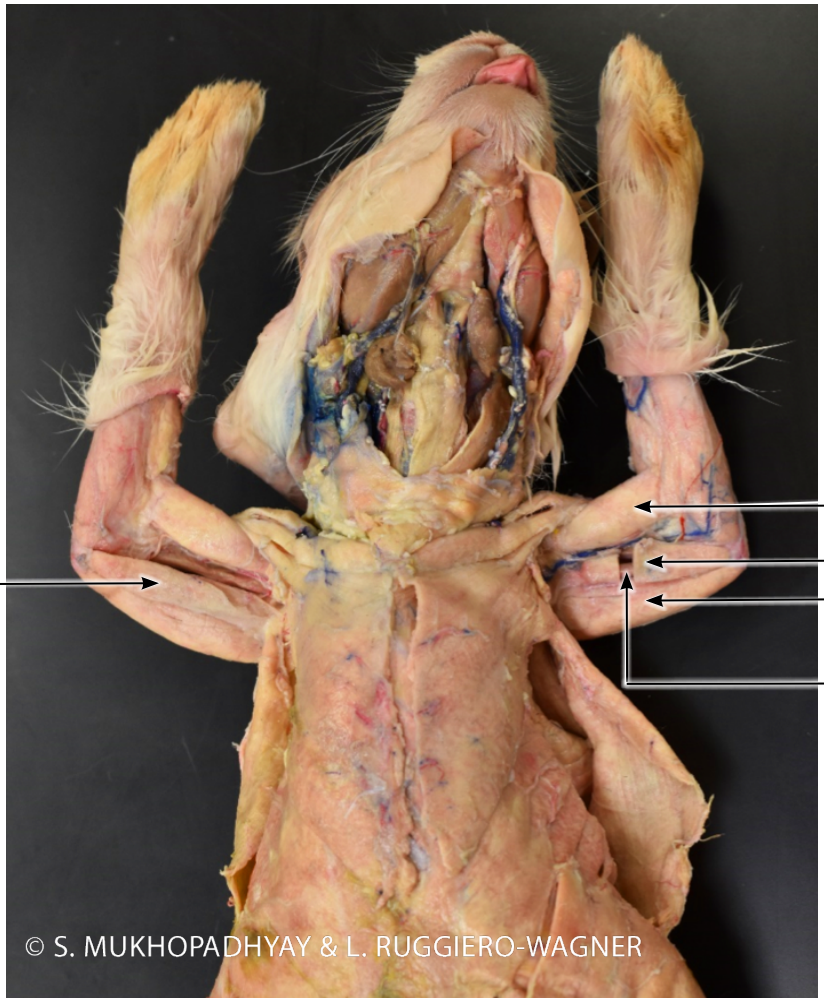

Figure 5b: Muscles of Front Leg (Arm) – Ventral view

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MUSCLES OF THE HIP AND BACK LEG

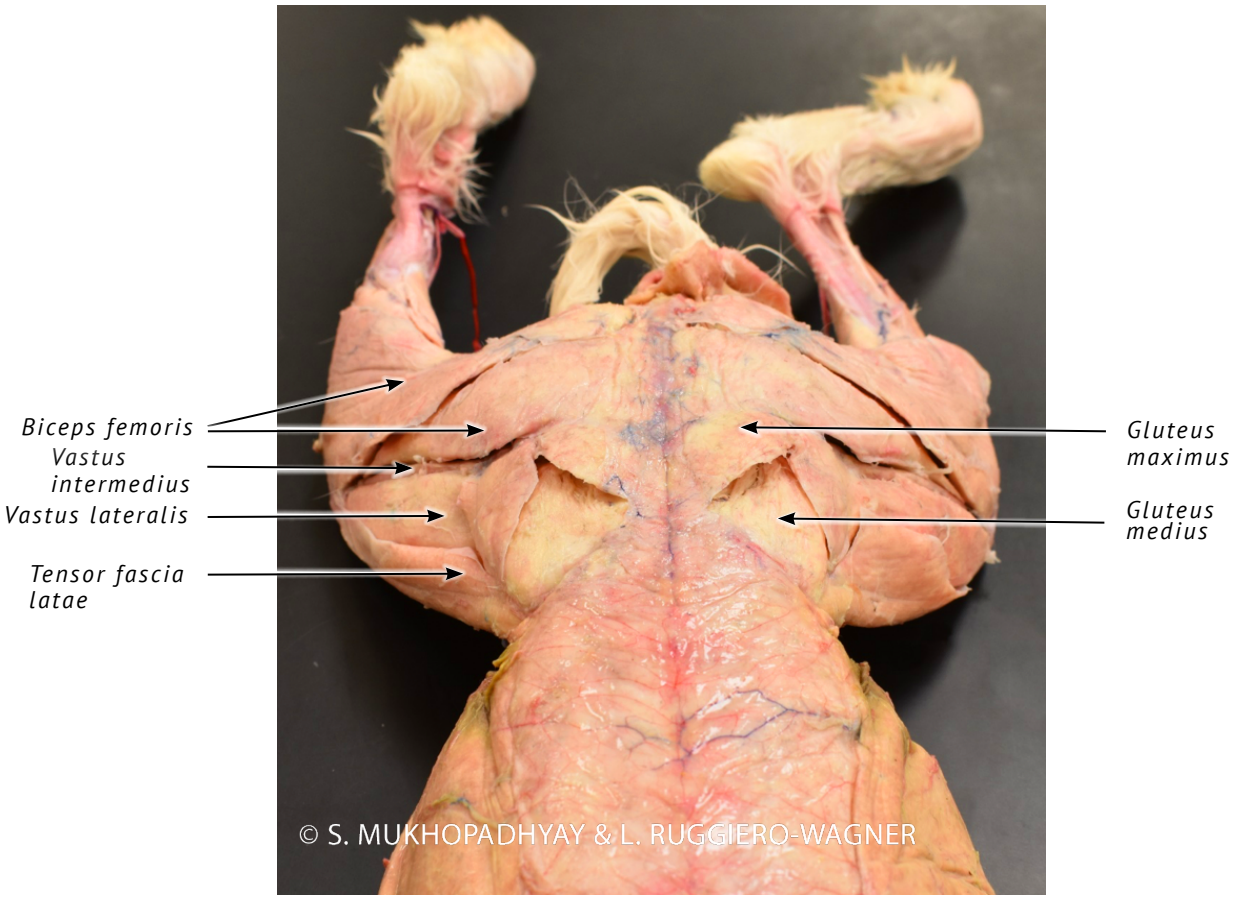

Figure 6a: Muscles of Hip and Leg (dorsal)

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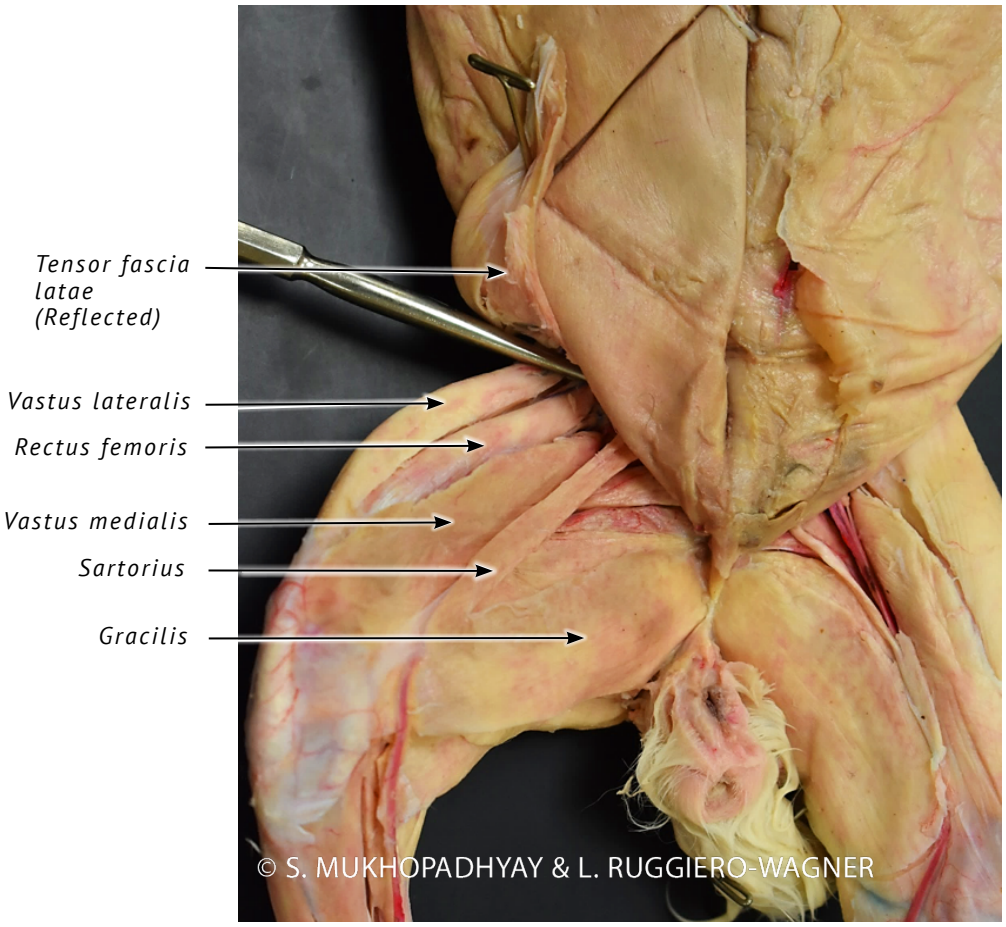

Figure 6b : Muscles of Ventral Leg (superficial thigh)

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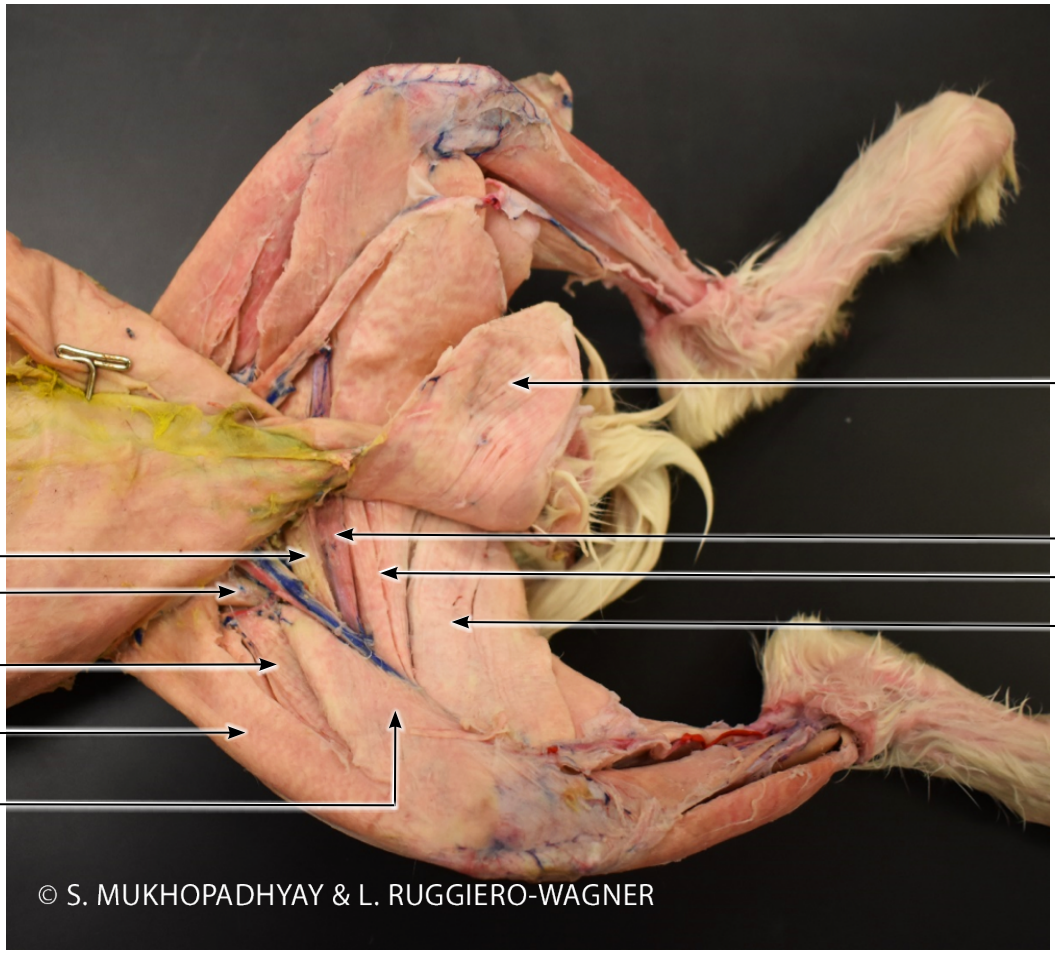

Dissection Note: Sartorius on the right side is removed.

Figure 6c: Muscles of Ventral Leg (deep thigh)

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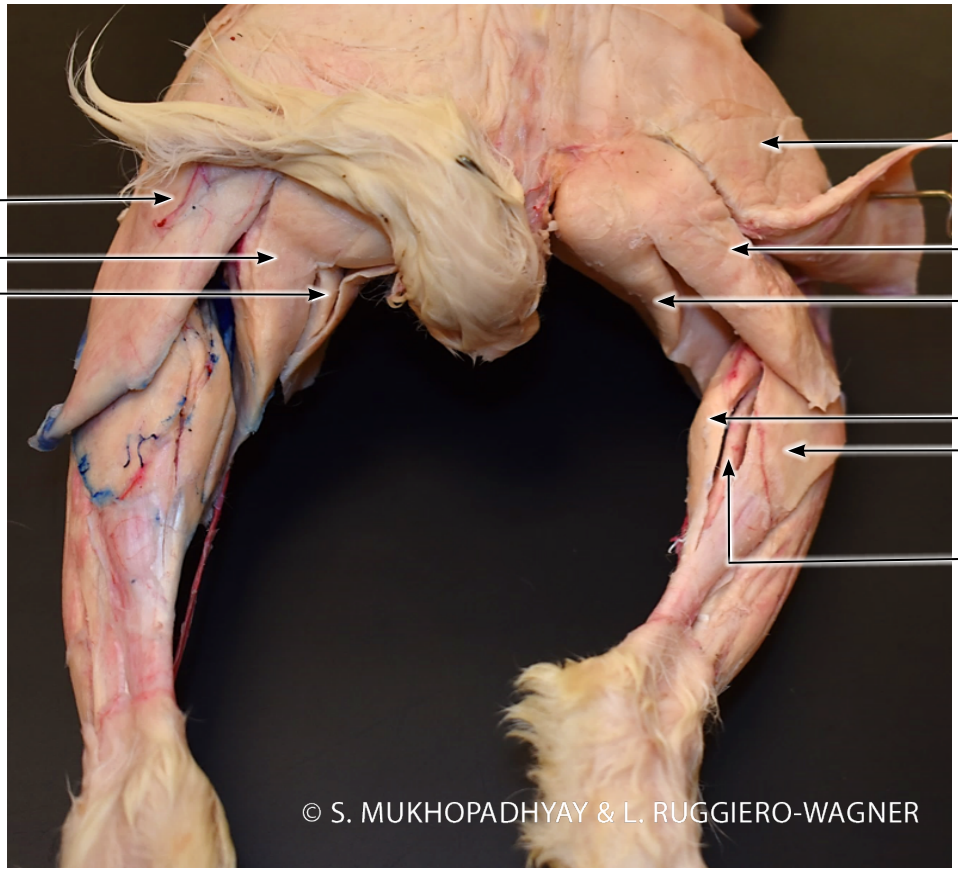

Figure7a: Muscles of Lower Leg(dorsal)

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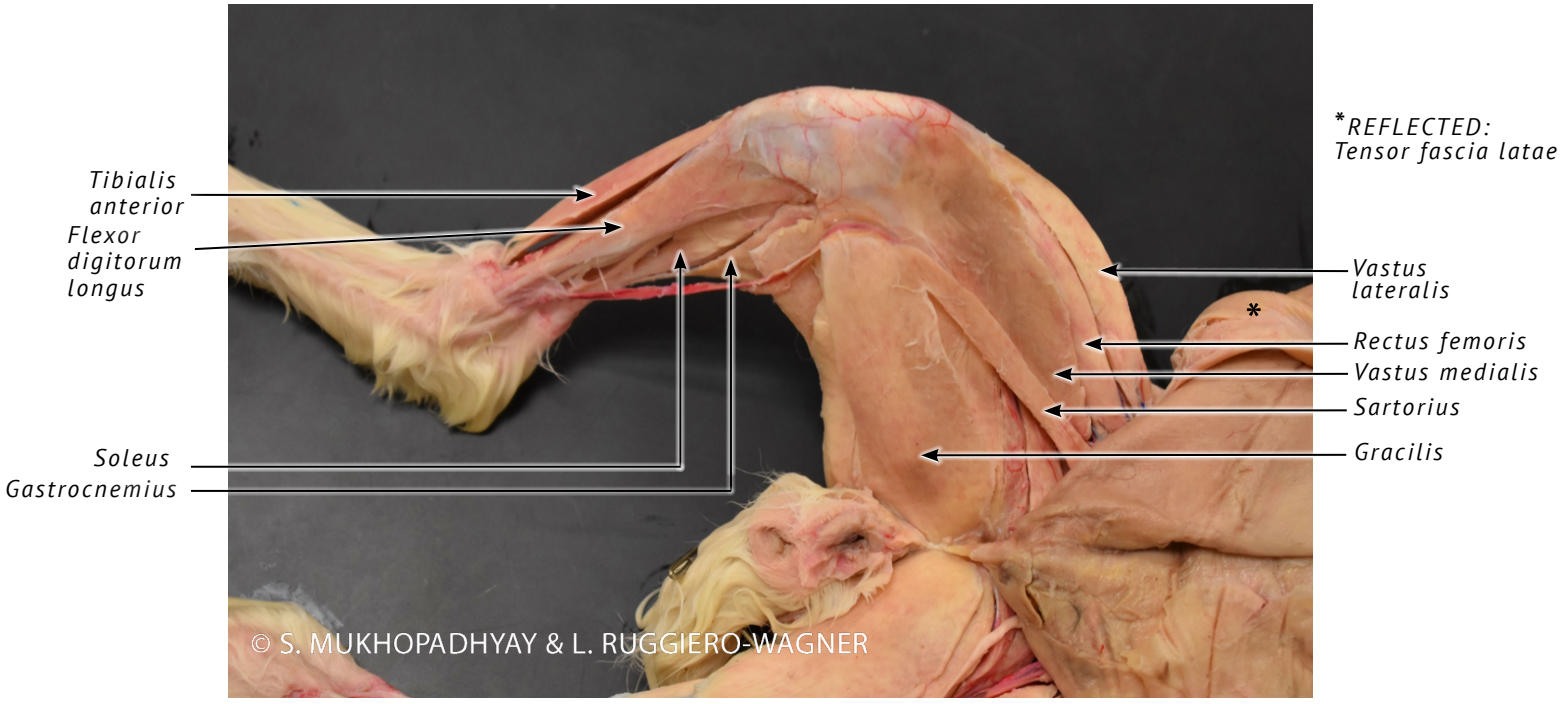

Figure 7b: Muscles of Lower Leg (ventral)

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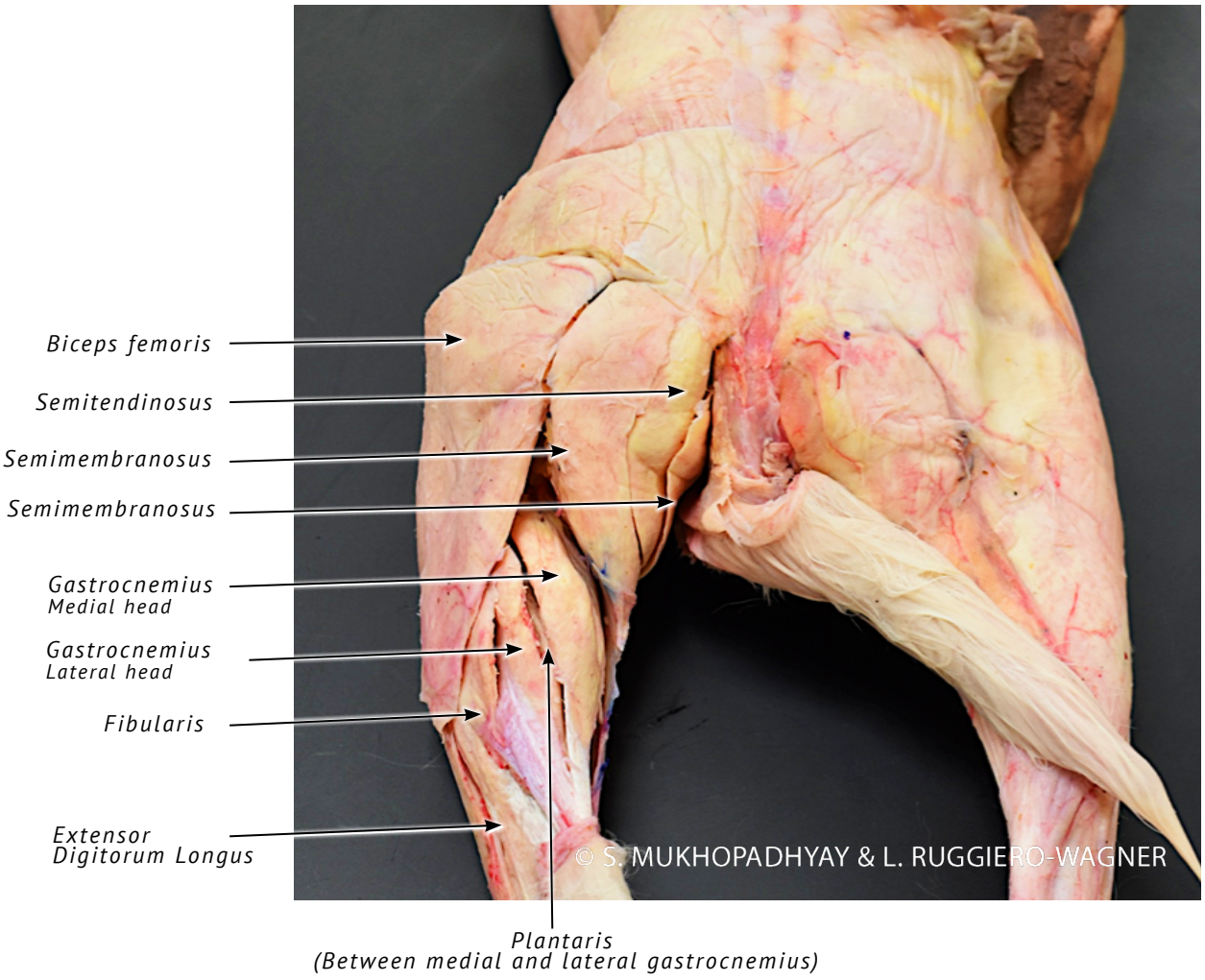

Figure 7c: Muscles of Lower Leg (dorsal)

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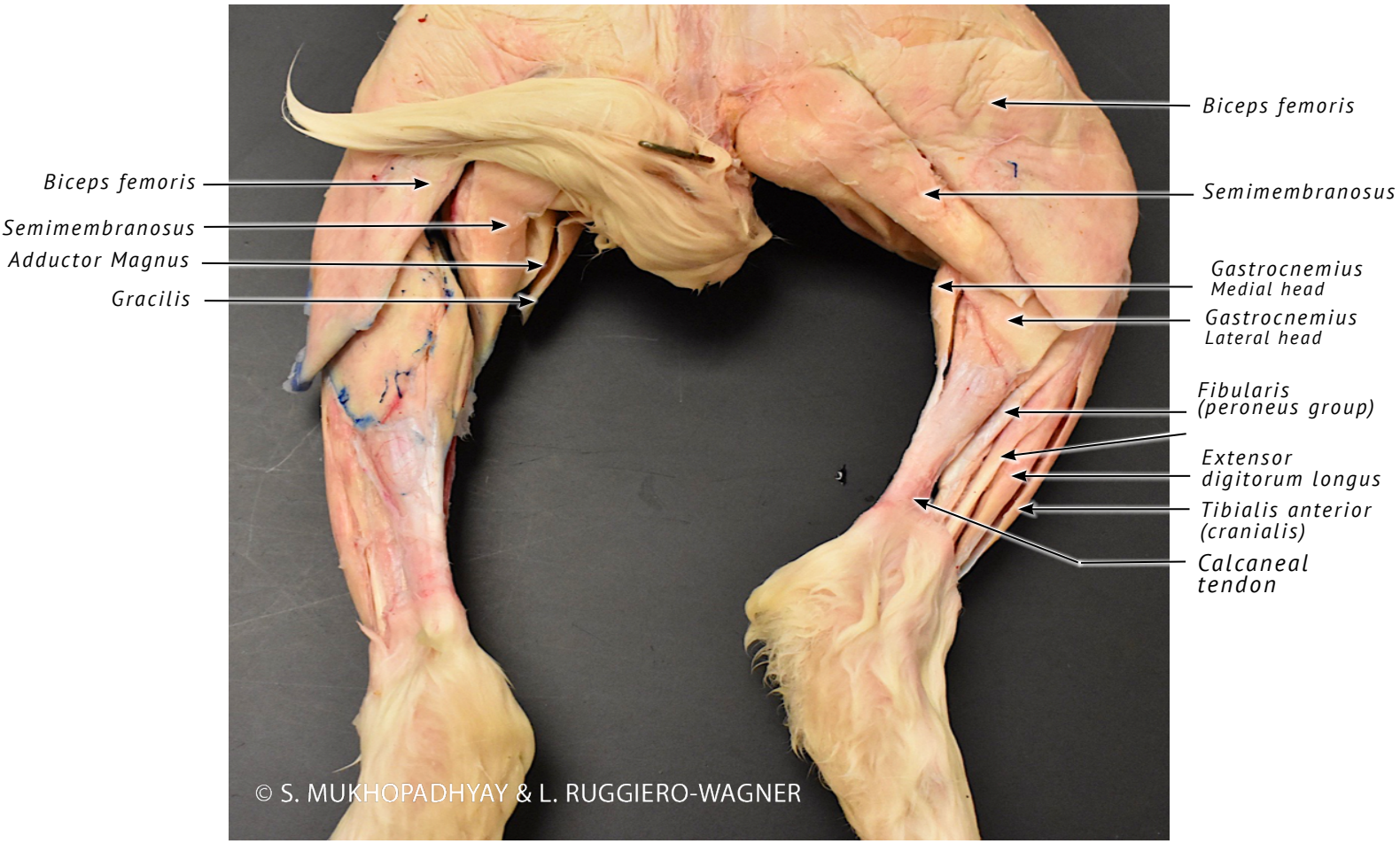

Figure 7d: Muscles of Lower Leg (dorsolateral)

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Dissection Note: Peroneus group (Fibularis):Includes 3 heads, 2 visible in this picture.

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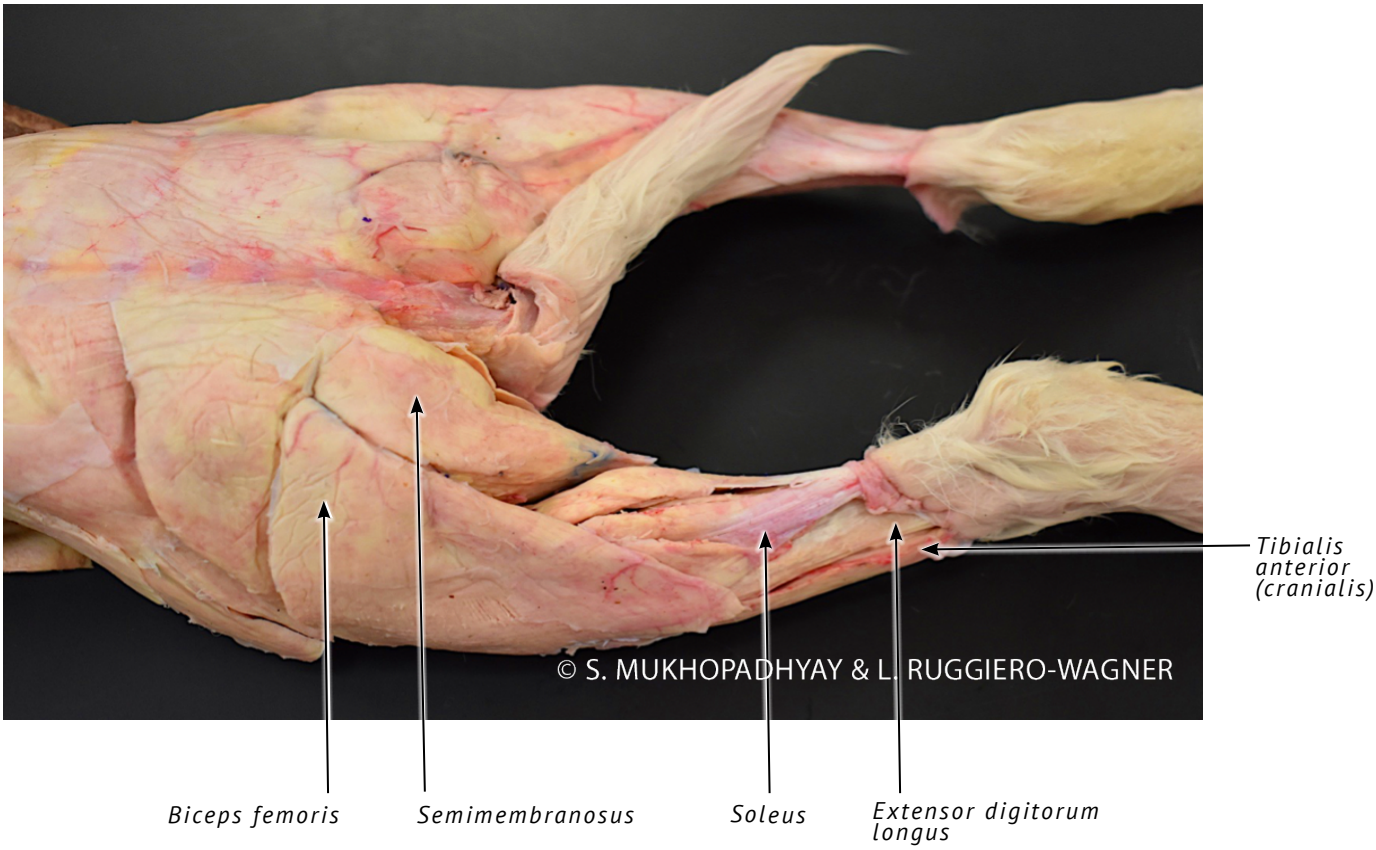

Figure 7e: Muscles of Lower Leg (dorsolateral)

Dissection Note: Remove gasctrocnemius to reveal soleus

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