

**ASSESSMENT FOR CERTIFICATION OF COMPETENCE IN
FETAL MORPHOLOGICAL EXAMINATION**

LABORATORY LITTER ASSESSMENT - SKELETAL



**THE INTERNATIONAL REGISTER OF FETAL
MORPHOLOGISTS**

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyne Marco-Gregori

Name of Applicant (Laboratory):	Evelyne Marco-Gregori, Citoxlab France
Examination type assessed (species):	SKELETAL EXAMINATION RABBIT
Date of assessment:	September 2018
Names of assessors:	Mohamed Daoud, Stéphane Barbellion

Specimens used for assessment: [insert Study code, litter and fetus ID in each box]

M30974 / F02			
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Key for abbreviations:

P – Needed prompting

PP – Needed frequent prompting

N – Nervous

VIP – Volunteered information previously

DK – Didn't know the answer

NC – Not consistent in technique

Assessor's Summary:

[delete or underline to highlight the appropriate description from the options below:]

Competent/competent and focussed / engaged and focussed during the assessment, and demonstrated / effectively communicated a sound knowledge / an impressive understanding / of all aspects

Assessor signatures

Date

25-Sep-2018

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyne Marco-Gregori

COMMENTS FROM LABORATORY SPECIMEN EXAMINATION: [insert free text in boxes]

Talk through/procedure

Question	Acceptable Response	Response
Describe to me what you are doing; what do you see; what are you looking at?	Clearing fat Turning specimen Examination from all sides Manipulation for clarification	<u>Dorsal View:</u> - Skull bones (nasals, parietals, parietals, suture, fontanelle) - size, position - interparietal, suproccipital - premaxillary, maxillary, mandibles, incisors - squamosal, zygomatic process - palate, sockets. - mandibles - hyoid, exoccipital <u>Ventral View:</u> - counting Cerv. Vert. + lateral view 7 Thoracic Vert. 12 vert / 12 ribs Lumbar Vert. 7
What are you looking at now Describe what you see		Ilium / Ischium axis - Sacral Vert. - Pubis - caudal Vert. (>15) <u>Dorsal View:</u> - Vert. arches <u>Sternebrae:</u>
Note how candidate is recording observations – as they are found or at the end of the examination?	as they are found	5th Sternebrae 10 limbs / paws: Carpals, middle, distal, proximal Phalanges, metatarsals / talus claw
Check that specimen is being manipulated appropriately.		Yes

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyn Marco-Gregori

Consistency in procedural routines

Question	Acceptable Response	Response
Can you think what the importance of consistency in magnification across examiners might be	Consistency important so that all examiners see and record to the <u>same level of detail</u> .	Consistency for each operator but each has its own routine - flexible in the routine.
Do you always use the <u>same</u> sequence / routine for examination? Why do you think that it is important?	<u>Yes – don't miss anything out</u> , important for pattern recognition, subconscious alert.	
Do you think it is necessary to look at structures from more than one aspect?	<u>Yes - gain clear view of 3D structure, enable all structures/aspects of structures to be seen clearly.</u>	
Do you always count the vertebrae/ribs? Why do you think it's necessary?	<u>Yes, (changes in numbers could be associated with anterior/posterior positional shifts)</u>	To detect any anomaly before recording the finding

Terminology and recognition levels used

Question	Acceptable Response	Response
How do you ensure other examiners are using the same terms as you for the same observation?	<u>User guides</u> and recognition levels	SOPs, fetal glossary
How do you decide whether or not to record observations?	<u>Discuss with colleagues</u> <u>Reference material, user guides</u> , laboratory recognition levels, background data	Signifier SD, repro expert
What could you do to make sure that you've chosen the most accurate term?	<u>Peer review/consistency check</u> (examiner records should be traceable)	
Would you assign a severity level, why?	User guides and recognition levels <u>Discuss with colleagues</u>	No - No severity
How do you ensure other examiners are using the same severities as you for the same observation?	<u>Reference material, user guides</u> , laboratory recognition levels, background data <u>Peer review/consistency check</u> (examiner records should be traceable)	

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelynne Marco-Gregori

Recognition of artefacts

Question	Acceptable Response	Response
How would you decide if real or artefact?	Margins of the structure <u>smooth or jagged</u> , as if <u>shearing</u> has taken place <u>Pieces don't fit together</u>	- during external, - evisceration, skinning - tail cut/broken
Does the condition of adjacent bones support your decision?	Excessive maceration evident, resulting in break-down of the soft tissues holding the skeleton together, <u>particularly the extremities</u> , such that bones have become detached	
What procedural errors are likely to lead to artefacts	Processing has caused shrinkage, e.g. in the brain, causing the cranium to collapse Specimen has possibly not been <u>completely immersed in processing fluids or stain</u> , resulting in ossified areas being <u>unstained</u> Specimens have been clumped together, causing non-uniform penetration of the stain	
Can you think of any observations which could be caused by an artefact?	Specimen has been fixed in a posture that has caused the rib cage to appear asymmetrical, the pelvis to appear out of alignment, or the limbs to appear distorted <u>Refer to necropsy observations</u>	- Study done - artefact recorded
Would you record artefacts	Explain how	- Recorded in the system
How would you record an artefact?		

Correct identification of anomalies

Question	Acceptable Response	Response
What could you do to make sure that you've chosen the most accurate term	Refer to recognition levels and user guides	SOs, User guide fetal glossary discuss with colleagues, SD, Repro expert contact community of practice

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyn Marco-Gregori

Question	Acceptable Response	Response
Why have you used that term (e.g.) <ul style="list-style-type: none"> Not ossified or absent bipartite ossification or bipartite incompletely ossified or small Interrupted or incompletely ossified 	Reason should be based on structures present, cartilage precursors, space for bones to ossify, symmetry/alignment.	- No space - cartilage / precursors - cartilage (split) - IO vs small
What might you see in(add bone or area) Intervertebral		- Absent - IO - split - small
What might you see in(add bone or area) Ribs	- bifurcated / branched - IO ribs - Fused	- Counting - Extra Ribs (full, not short) - Extra / missing Vert. - Pelvic cranial / caudal shift.

Demonstration of knowledge of consequence of findings (choose minimum of 3 from this section)

What else might you see with:		
If more or less than the usual number of ribs were present at the thoracolumbar border what else might you expect to see?	Pelvic girdle position/number of and form of all vertebrae/length of ribs /ventral crest (rabbit) /check for branching /fusion of ribs	
<u>Single naris</u>	Fusion of skull premaxillae/nasals/frontals single incisor socket displaced orbital sockets, form of mandible.	oss. Nasals Fused future
<u>Absent tail</u> [at external observation]	Check for presence for caudal vertebrae	- technical damage exclude. - Absent caudal Vert.
Domed head	Check for artefact and size of fetus, fused frontals.	
<u>Short lower jaw</u>	Check presence/fusion of <u>mandible</u> , dental sockets.	- fused - IO, mishappen

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelynne Marco-Gregori

What else might you see with:		
Flat cranium / occipital projection	Check for vertebral splaying/spacing/spina bifida Malrotated limbs	
What would you expect to record in association with low fetal weight?	Phalanges/metacarpals/metatarsals/caudal vertebrae, cervical centra. Order of sternebral, digit and vertebral centrum ossification. [Check day of PM if whole litter affected.]	<u>±0</u> - generalized sternebrae Pubis Metacarpals/tarsals Caudal Vert.
Or high fetal weight?	Phalangeal ossification, cervical and caudal vertebra ossification, size of suture/fontanelle, omosternum, epiphyseal ossification, presence of calcaneum, astragalus, elongated acromium and metacromium processes. [Check day of PM if whole litter affected.]	—

Awareness of importance of communication lines as reaction to unusual findings

Question	Acceptable Response	Response
What would you do if you had never seen a finding before; if you were unsure how to describe an observation	<u>Discuss/review findings with colleagues, refer to recognition levels/user manuals/training material/background data; discuss with manager</u>	

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyn Marco-Gregori

Awareness of the possibility of anomalies in cartilaginous structures surrounding anomalous bones

Question	Acceptable Response	Response
Do you examine any cartilaginous areas?; Which ones	<u>Yes – sternbral/costal, intervertebral discs, pelvic girdle</u>	- not recorded during single staining
How do examine cartilage in single stained specimens?	<u>Manipulation of specimen to visualise cartilage, lighting, processing.</u>	
Why do you think that it is helpful to record cartilage observations?	<u>Fused sternbrae/ribs, branched ribs, extra ribs, pelvic girdle articulation.</u>	- IO vs Absent - intracostal

Additional comments

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyne Marco-Gregori

Name of Applicant (Laboratory):	Evelyne Marco-Gregori, Citoxlab France
Examination type assessed (species):	SKELETAL EXAMINATION RABBIT
Date of assessment:	September 2018
Names of assessors:	Mohamed Daoud, Stéphane Barbellion

Specimens used for assessment: [insert Study code, litter and fetus ID in each box]

M39174	2		
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Key for abbreviations:

P - Needed prompting

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N - Nervous

VIP - Volunteered information previously

DK - Didn't know the answer

NC - Not consistent in technique

Assessor's Summary:

[delete or underline to highlight the appropriate description from the options below:]

Competent/competent and focussed / engaged and focussed during the assessment, and demonstrated / effectively communicated a sound knowledge / an impressive understanding / of all aspects

Assessor signatures

Date

September 2018

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LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyn Marco-Gregori

COMMENTS FROM LABORATORY SPECIMEN EXAMINATION: [insert free text in boxes]

Talk through/procedure

Question	Acceptable Response	Response
Describe to me what you are doing; what do you see; what are you looking at?	Clearing fat Turning specimen Examination from all sides Manipulation for clarification	<p><u>Dorsal</u>:</p> <ul style="list-style-type: none"> - naso - Frontal, Parietal - interosphenoid, for - Post. Process. - malleolus, max, process - incisor - Palate Hypo, arch - ex. vert. - vert. Cervical: Arch & vert - vert. Thoracic, 12/12C & 12/12D integr. - L. dorsal - vert. Lumb: - isch. - os ilium & Pubis - vert. Sacral & Caudal. - scapula: not, shape - Fore Limbs: Clavical & Radius. ulna, Humer. carpals.
What are you looking at now Describe what you see		<p>structure of bone, misc leg</p> <p>size</p>
Note how candidate is recording observations – as they are found or at the end of the examination?		at time of observation.
Check that specimen is being manipulated appropriately.		yes.

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyne Marco-Gregori

Consistency in procedural routines

Question	Acceptable Response	Response
Can you think what the importance of consistency in magnification across examiners might be	Consistency important so that all examiners see and record to the same level of detail.	Yes: Proust, Fa - don't forget
Do you always use the same sequence / routine for examination? Why do you think that it is important?	Yes - don't miss anything out, important for pattern recognition, subconscious alert.	
Do you think it is necessary to look at structures from more than one aspect?	Yes - gain clear view of 3D structure, enable all structures/aspects of structures to be seen clearly.	
Do you always count the vertebrae/ribs? Why do you think it's necessary?	Yes, (changes in numbers could be associated with anterior/posterior positional shifts)	

Terminology and recognition levels used

Question	Acceptable Response	Response
How do you ensure other examiners are using the same terms as you for the same observation?	User guides and recognition levels	SOP. Reference material
How do you decide whether or not to record observations?	Discuss with colleagues Reference material, user guides, laboratory recognition levels, background data	
What could you do to make sure that you've chosen the most accurate term?	Peer review/consistency check (examiner records should be traceable)	
Would you assign a severity level, why?	User guides and recognition levels Discuss with colleagues	NO & v. h
How do you ensure other examiners are using the same severities as you for the same observation?	Reference material, user guides, laboratory recognition levels, background data Peer review/consistency check (examiner records should be traceable)	

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyn Marco-Gregori

Recognition of artefacts

Question	Acceptable Response	Response
How would you decide if real or artefact?	Margins of the structure smooth or jagged, as if shearing has taken place Pieces don't fit together	- skinning of fchs. - tail
Does the condition of adjacent bones support your decision?	Excessive maceration evident, resulting in break-down of the soft tissues holding the skeleton together, particularly the extremities, such that bones have become detached	- check with fund one
What procedural errors are likely to lead to artefacts	Processing has caused shrinkage, e.g. in the brain, causing the cranium to collapse Specimen has possibly not been completely immersed in processing fluids or stain, resulting in ossified areas being unstained Specimens have been clumped together, causing non-uniform penetration of the stain	- check staining method.
Can you think of any observations which could be caused by an artefact?	Specimen has been fixed in a posture that has caused the rib cage to appear asymmetrical, the pelvis to appear out of alignment, or the limbs to appear distorted Refer to necropsy observations	
Would you record artefacts	Explain how	- list ✓ - direction.
How would you record an artefact?		

Correct identification of anomalies

Question	Acceptable Response	Response
What could you do to make sure that you've chosen the most accurate term	Refer to recognition levels and user guides <u> </u>	- second Person

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyne Marco-Gregori

Question	Acceptable Response	Response
<p>Why have you used that term (e.g.)</p> <ul style="list-style-type: none"> Not ossified or absent bipartite ossification or bipartite incompletely ossified or small Interrupted or incompletely ossified 	Reason should be based on structures present, cartilage precursors, space for bones to ossify, symmetry/alignment.	<p>- 17a, 816</p> <p>- spoke</p> <p>- zone ossification / cartilage</p> <p>- Protrusion</p>
What might you see in(add bone or area)	interrupted	<p>- absent</p> <p>- incomplete</p> <p>- split</p> <p>- misshapen</p> <p>- small</p>
What might you see in(add bone or area)		

Demonstration of knowledge of consequence of findings (choose minimum of 3 from this section)

What else might you see with:		
If more or less than the usual number of ribs were present at the thoracolumbar border what else might you expect to see?	Pelvic girdle position/number of and form of all vertebrae/length of ribs /ventral crest (rabbit) /check for branching /fusion of ribs	26th, 27th
Single naris	Fusion of skull premaxillae/nasals/frontals single incisor socket displaced orbital sockets, form of mandible.	Position one socket
Absent tail [at external observation]	Check for presence for caudal vertebrae	
Domed head	Check for artefact and size of fetus, fused frontals.	
Short lower jaw	Check presence/fusion of mandible, dental sockets.	misshapen

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyne Marco-Gregori

What else might you see with:		
Flat cranium / occipital projection	Check for vertebral splaying/spacing/spina bifida Malrotated limbs	
What would you expect to record in association with low fetal weight?	Phalanges/metacarpals/metatarsals/caudal vertebrae, cervical centra. Order of <u>sternbral</u> , digit and vertebral <u>centrum</u> ossification. [Check day of PM if whole litter affected.]	<i>glosde</i> <i>612</i>
Or high fetal weight?	Phalangeal ossification, cervical and caudal vertebra ossification, size of suture/fontanelle, omosternum, epiphyseal ossification, presence of <u>calcaneum</u> , <u>astragalus</u> , elongated acromium and metacromium processes. [Check day of PM if whole litter affected.]	

Awareness of importance of communication lines as reaction to unusual findings

Question	Acceptable Response	Response
What would you do if you had never seen a finding before; if you were unsure how to describe an observation	Discuss/review findings with colleagues, refer to recognition levels/user manuals/training material/background data; discuss with manager	<i>second person</i>

LABORATORY LITTER ASSESSMENT - SKELETAL

Name of Candidate: Evelyne Marco-Gregori

Awareness of the possibility of anomalies in cartilaginous structures surrounding anomalous bones

Question	Acceptable Response	Response
Do you examine any cartilaginous areas?; Which ones	Yes – sternebral/costal, intervertebral discs, pelvic girdle	os sacra; Protruber.
How do examine cartilage in single stained specimens?	Manipulation of specimen to visualise cartilage, lighting, processing.	
Why do you think that it is helpful to record cartilage observations?	Fused sternebrae/ribs, branched ribs, extra ribs, pelvic girdle articulation.	Definition of art.

Additional comments

**EXAMPLES OF RABBIT SKELETAL ABNORMALITIES –
ASSESSMENT SPECIMENS**



**THE INTERNATIONAL REGISTER OF FETAL
MORPHOLOGISTS**

EXAMPLES OF RABBIT SKELETAL ABNORMALITIES – ASSESSMENT SPECIMENS

Name of Candidate: Evelyne Marco-Gregori

Name of Applicant (Laboratory):	Evelyne Marco-Gregori, Citoxlab France
Examination type assessed	SKELETAL RABBIT
Post coitum day at termination:	[insert day of termination, with Day 0 defined]
Date of assessment:	September 2018
Names of assessors	Mohamed Daoud, Stéphane Barbellion

Key for abbreviations:

P – Needed prompting

PP – Needed frequent prompting

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NC – Not consistent in technique

Assessor signature



Date

25-Sep-2018

EXAMPLES OF RABBIT SKELETAL ABNORMALITIES – ASSESSMENT SPECIMENS

Name of Candidate: Evelyne Marco-Gregori

Rabbit Specimens	Abnormalities	Comments
A	<p>10th thoracic hemivertebra- <u>absent right hemicentrum, vertebral arch and rib</u> or additional hemivertebra</p> <p>13th bilateral rib: pre-sacral vertebrae [7]/ 20 TLV</p> <p><i>other possible comments: misaligned 9th and 11th thoracic vertebral hemicentra and vertebral arches</i></p> <p><i>Long spinous process 4th lumbar vertebra</i></p>	<p><i>Cerv. Vert: 7</i></p> <p><i>12 VT right } 10th hemivertebra</i> <i>13 VT left } absent ribs, hemicentra</i></p> <p><i>6 VL</i> <i>4 SL</i></p>
B	<p>branched 11th right rib</p> <p>3rd lumbar hemivertebra- absent right hemicentrum and vertebral arch or additional hemivertebra</p> <p>13th left rib: pre-sacral vertebrae [7]/ 20 TLV</p> <p><i>other possible comments: misaligned 2nd and 4th lumbar vertebral hemicentra and vertebral arches</i></p> <p><i>Lumbar scoliosis</i></p>	
C	<p>isolated ossification site between 5th and 6th sternebrae</p> <p>13th bilateral rib: pre-sacral vertebrae [7]/ 20 TLV</p> <p><i>other possible comments: long spinous process 4th lumbar vertebra</i></p>	
D	<p>bridge of oss/partially fused/fused right jugal to maxillary process</p> <p>incompletely ossified 5th sternebra</p> <p><i>other possible comments: unossified bilateral epiphyses at head of tibia</i></p> <p><i>absent right forelimb</i></p>	
E	13 th left rib	
F	<p>note articulation of pelvic girdle-</p> <p>unilateral caudal shift left/right sided/incompletely ossified 6th sternebra</p> <p>13th bilateral rib</p>	

EXAMPLES OF RABBIT SKELETAL ABNORMALITIES – ASSESSMENT SPECIMENS

Name of Candidate: Evelyne Marco-Gregori

Rabbit Specimens	Abnormalities	Comments
K	Unossified metacarpal 1 st digit bilateral forelimb Epiphyses – none ossified	
L	Unossified 2 nd phalanx 5 th digit left/ bilateral forelimb <i>other possible comments: i.o metacarpal 1st digit Left forelimb</i>	
KD1	13 th Bilateral rib Malrotated Right hindlimb: Short/ misshapen right tibia and fibula Unossified Right talus Fused / partially fused caudal vert- 1 st to 2 nd , 4 th to 5 th , 9 th to 11 th , 17 th to 18 th Kinked tail – 9 th to 11 th caudal vert also disorganised / misshapen/ misaligned/ small Sutural bone nasofrontal suture Fissure interparietal Unossified area bilateral parietal (or see other possible comments) <i>Other possible comments: long acromion/metacromion process size of interparietal Damaged parietals ? long transverse process</i>	
KD2	13 th Bilateral rib: 20 TLV (pre-sacral vertebrae [7]) Isolated ossification site between 5 th and 6 th Sternebra. (additional sternebral centre)	
<u>KD3</u>	<u>12 Bilateral rib</u> <u>Right cervical rib, short</u> supernumerary Partially/ fused 12 th to 13 th caudal vertebrae Kinked tail <i>Other possible comments: Large nasal/ frontal suture Damaged Left ribs</i>	<i>Nasal, right, hole + no severity (short vs long) 7/12/7 10/11th Fused Caudal Vert. < 15 caudal Vert. Bent tail.</i>

EXAMPLES OF RABBIT SKELETAL ABNORMALITIES – ASSESSMENT SPECIMENS

Name of Candidate: Evelyne Marco-Gregori

Name of Applicant (Laboratory):	Evelyne Marco-Gregori, Citoxlab France
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Examination type assessed SKELETAL RABBIT

Post coitum day at termination: [insert day of termination, with Day 0 defined]

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EXAMPLES OF RABBIT SKELETAL ABNORMALITIES – ASSESSMENT SPECIMENS

Name of Candidate: Evelyne Marco-Gregori

Rabbit Specimens	Abnormalities	Comments
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B	<p>branched 11th right rib</p> <p>3rd lumbar hemivertebra- absent right hemicentrum and vertebral arch or additional hemivertebra</p> <p>13th left rib: pre-sacral vertebrae [7]/ 20 TLV</p> <p><i>other possible comments: misaligned 2nd and 4th lumbar vertebral hemicentra and vertebral arches</i></p> <p><i>Lumbar scoliosis</i></p>	
C	<p>isolated ossification site between 5th and 6th sternebrae</p> <p>13th bilateral rib: pre-sacral vertebrae [7]/ 20 TLV</p> <p><i>other possible comments: long spinous process 4th lumbar vertebra</i></p>	
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E	13 th left rib	
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Name of Candidate: Evelyne Marco-Gregori

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KD2	13 th Bilateral rib: 20 TLV (pre-sacral vertebrae [7]) Isolated ossification site between 5 th and 6 th Sternebra. (additional sternebral centre)	
KD3	12 Bilateral rib Right <u>cervical</u> rib, <u>short</u> supernumerary Partially/ fused 12 th to 13 th caudal vertebrae <u>10-11</u> <u>Kinked</u> tail <i>Other possible comments: Large nasal/ frontal suture Damaged Left ribs</i>	<i>nasal droit</i>

RABBIT ALIZARIN RED S SPECIMEN IMAGES FOR CERTIFICATION

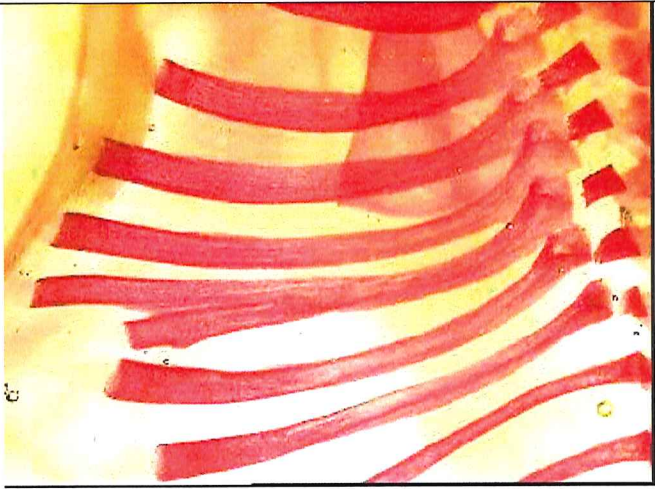


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THIS FORM WAS UPDATED IN SEPTEMBER 2018 – CHECK THAT YOU ARE USING THE CORRECT VERSION

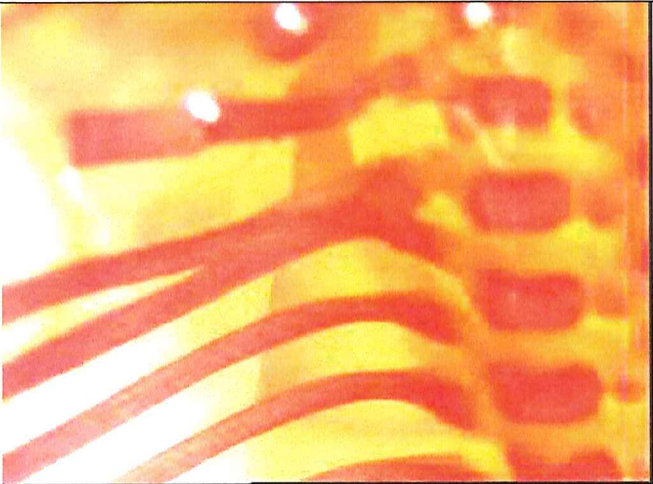
RABBIT ALIZARIN RED S SKELETAL SPECIMEN IMAGES FOR CERTIFICATION

Name of Candidate: Evelynne Marco-Gregori

Image 1	Questions (annotate responses)	Comments
	What is the observation? <ul style="list-style-type: none"> Ribs branched - <i> bifurcated</i> (Ribs are broken away at heads; this is damage) 	<i>Ventral view: ribs area</i>
	What might you want to say about this? <ul style="list-style-type: none"> How would you differentiate between fused or branched rib / what observations helped you to reach your conclusion 	<i>one site of proximal origin - articulat° ribs/arches - costal cartilage</i>
	How would you make sure you were recording the correct finding/position? <ul style="list-style-type: none"> Count ribs and associated vertebral arches/costal cartilage. Would looking at dorsal and ventral views aid interpretation? What might you expect to see? 	
	What else might be associated with this? <ul style="list-style-type: none"> Are there any vertebrae <u>misaligned/scoliosis</u>? What are the consequences for the <u>costal cartilage/sternebrae and other ribs</u> (both sides)? Would you attach a severity to this observation? If so, why, what would it be? 	


RABBIT ALIZARIN RED S SKELETAL SPECIMEN IMAGES FOR CERTIFICATION

Name of Candidate: Evelynne Marco-Gregori

Image 5	Questions (annotate responses)	Comments
	What is the observation? <ul style="list-style-type: none"> • <u>Fused</u> or branched? (Right ribs fused, proximal) 	<i>not bifurcated 2 digits / 2 articulation with ribs</i>
	What might you want to say about this? <ul style="list-style-type: none"> • How would you differentiate between fused/branched rib (N.B. <u>articulating surface of ribs</u>) 	
	How would you make sure you were recording the correct finding/position? <ul style="list-style-type: none"> • <u>Count ribs and associated vertebral arches/costal cartilage</u> • Would looking at dorsal and ventral views aid interpretation? 	
	What else might be associated with this? <ul style="list-style-type: none"> • Are there any vertebrae <u>misaligned/scoliosis</u>? • What are the consequences for the vertebrae, ribs and <u>costal cartilage/sternebrae</u>? <p>(Not very clear)</p>	

RABBIT ALIZARIN RED S SKELETAL SPECIMEN IMAGES FOR CERTIFICATION

Name of Candidate: Evelynne Marco-Gregori

Image 13	Questions (annotate responses)	Comments
	<p>What might you want to say about this?</p> <ul style="list-style-type: none"> • <u>Misaligned and fused 2nd to 5th sternobral hemicentres</u> (or sternabrae 2-5 offset/offset ossification and fused)? How would you describe the observations for each sternabrae (asymmetric ossification; bridge of ossification/fusion; offset ossification centres; bifurcated sternabra) Why have you chosen those terms • Are all the sternabrae present, how can you tell? • <u>Bifurcated 6th sternabra</u> • Would you consider there being a small additional ossified centre present? 	<p><u>Sternum</u> <u>malpositioned</u></p>
	<p>Would you make any comment on cartilage?</p> <ul style="list-style-type: none"> • <u>Misaligned 2nd to 5th costal cartilage</u> (or costal cartilages 3, 4, ?5 <u>asymmetrically</u> aligned) • Is the xiphoid cartilage split? • Difficult to see if there is a 1st [left] costal cartilage present 	<p><u>No</u></p>
	<p>What else might be associated with this or similar abnormalities?</p> <ul style="list-style-type: none"> • Dorsoventral distortion of sternum • <u>Fused costal cartilage's</u> and possibly ribs • Any effects on vertebrae, ribs or manubrium 	
	<p>Would this be evident externally?</p> <ul style="list-style-type: none"> • Ventral midline cleft? • Would you use an overriding term • Would you allocate a severity to this observation, if so what would it be; why 	<p><u>No</u></p>

RABBIT ALIZARIN RED S SKELETAL SPECIMEN IMAGES FOR CERTIFICATION
Name of Candidate: Evelyne Marco-Gregori

Name of Applicant (Laboratory):	Evelyne Marco-Gregori, Citoxlab France
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Examination type assessed (species): **SKELETAL RABBIT**

Date of assessment: September 2018 *25 sep 2018*

Specimens used for assessment: [insert fetus ID in each box]

<i>1</i>	<i>5</i>	<i>13</i>			
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Key for abbreviations:

P - Needed prompting

N - Nervous

DK - Didn't know the answer

PP - Needed frequent prompting

VIP - Volunteered information previously

NC - Not consistent in technique

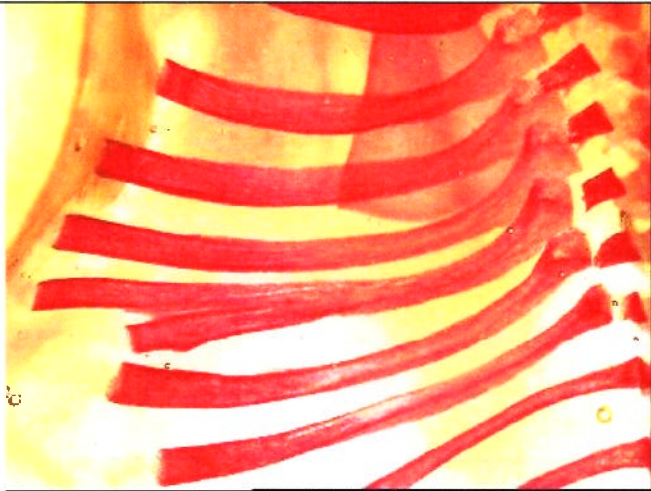
Assessor signature

Date

[Signature]
25 sep 2018


RABBIT ALIZARIN RED S SKELETAL SPECIMEN IMAGES FOR CERTIFICATION

Name of Candidate: Evelyne Marco-Gregori

Image 1	Questions (annotate responses)	Comments
	What is the observation? <ul style="list-style-type: none"> Ribs branched (Ribs are broken away at heads; this is damage) 	pharynx
	What might you want to say about this? <ul style="list-style-type: none"> How would you differentiate between <u>fused</u> or <u>branched</u> rib / what observations helped you to reach your conclusion 	origin
	How would you make sure you were recording the correct finding/position? <ul style="list-style-type: none"> Count ribs and associated vertebral arches/costal cartilage. Would looking at <u>dorsal</u> and ventral views aid interpretation? What might you expect to see? 	
	What else might be associated with this? <ul style="list-style-type: none"> Are there any vertebrae misaligned/<u>scoliosis</u>? What are the consequences for the costal cartilage/sternabrae and other ribs (both sides)? Would you attach a severity to this observation? If so, why, what would it be? 	


RABBIT ALIZARIN RED S SKELETAL SPECIMEN IMAGES FOR CERTIFICATION

Name of Candidate: Evelyne Marco-Gregori

Image 5	Questions (annotate responses)	Comments
	What is the observation? <ul style="list-style-type: none"> Fused or branched? (Right ribs fused, proximal) 	2x origin (Arch)
	What might you want to say about this? <ul style="list-style-type: none"> How would you differentiate between fused/branched rib (N.B. articulating surface of ribs) 	2x origin
	How would you make sure you were recording the correct finding/position? <ul style="list-style-type: none"> Count ribs and associated vertebral arches/costal cartilage Would looking at dorsal and ventral views aid interpretation? 	
	What else might be associated with this? <ul style="list-style-type: none"> Are there any vertebrae misaligned/scoliosis? What are the consequences for the vertebrae, ribs and costal cartilage/sternebrae? <p>(Not very clear)</p>	

RABBIT ALIZARIN RED S SKELETAL SPECIMEN IMAGES FOR CERTIFICATION

Name of Candidate: Evelyne Marco-Gregori

Image 13	Questions (annotate responses)	Comments
	<p>What might you want to say about this?</p> <ul style="list-style-type: none"> • <u>Misaligned</u> and <u>fused</u> 2nd to 5th sternebrae hemicentres (or sternbrae 2-5 offset/offset ossification and fused)? How would you describe the observations for each sternbrae (asymmetric ossification; bridge of ossification/fusion; offset ossification centres; bifurcated sternebra) Why have you chosen those terms • Are all the sternbrae present, how can you tell? • <u>Bifurcated</u> 6th sternebra • Would you consider there being a small additional ossified centre present? 	
	<p>Would you make any comment on cartilage?</p> <ul style="list-style-type: none"> • Misaligned 2nd to 5th costal cartilage (or costal cartilages 3, 4, ?5 asymmetrically aligned) • Is the <u>xiphoid cartilage</u> split? • Difficult to see if there is a 1st [left] <u>costal</u> cartilage present 	
	<p>What else might be associated with this or similar abnormalities?</p> <ul style="list-style-type: none"> • Dorsoventral distortion of <u>sternum</u> • Fused <u>costal</u> cartilage's and possibly <u>ribs</u> • Any effects on vertebrae, ribs or manubrium 	
	<p>Would this be evident externally?</p> <ul style="list-style-type: none"> • Ventral midline cleft? • Would you use an overriding term • Would you allocate a severity to this observation, if so what would it be; why 	