



## Breed Education 2015 CCA seminar proposal

by

Breed Ed Committee

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## EXECUTIVE SUMMARY

Living History: The Collie Club of America has a rare opportunity to give to its membership an unprecedented experience never available before in any other breed.



**Ch. Fantasy's Bronze Talisman, ROM, ROM-P**

is one of the most important Collies in the history of our breed. Debbie Holland 's incredibly foresightful and generous gift of Brandon's skull pays forward for the mentorship she received from Brenda Miramon, who received it from Bobbee Roos, who in turn brought it forward from Dot Gerth. What is available is a legacy! Brandon's skull is potentially perishable BUT it can be preserved for posterity and we have the ability to realize this opportunity.

The CCA Breed Education Committee would like you to consider allowing us to present an advanced head study seminar at the 2015 CCA with replicas of Brandon's skull. The estimated cost of this seminar is \$4,990 to purchase and create materials. There is a fair amount of lead time involved with acquiring the skull(s) for the seminar, so we would like your approval within the next 22 days in order to comfortably meet our deadlines. Our National is a mere 5 months from now and there is still work to be completed by our Committee once we have the first skull.

Comparatively, the Collie skull is similar to a good foundation under a beautiful home; without a good foundation the quality of the construction layers on that foundation would not be possible. The seminar's attendees would leave with a better understanding of the component layers that create the final qualities of a Collie's beautiful head by actively engaging in sculpting of these layers. Each group would be provided a mold replicated skull of Brandon.

## GOALS

Our goal for the 2015 CCA is to provide our club members with a better understanding of not only the Collie's head components but also how these parts contribute to the unique attributes of our breed's head. Understanding that this is a complex endeavor we would expect to build on this first presentation in future years. Funds invested in the skull molds for the upcoming seminar will not become a static outlay. Rather, they could be used as a continuing educational outreach. When combined with the video of the presentation, clubs across the country could rent the skulls and clay used to present an engaging education program for their own membership. We currently have the technology to realize this phenomenal opportunity to take learning off the pages of a book and place it into the hands of our membership. We appreciate your consideration on this wonderful opportunity for the future.

## RESEARCH BACKGROUND

Five months ago the Committee delved into the possibility of an advanced study on the head. Our goal was to make the presentation dynamic. Our initial thought was to have attendees break into engaged groups molding layers of "tissue" on the skull. Extensive research on various methodology transpired.

### **Some of the research activities:**

1. How could we provide skulls for each group?
  - a. We would try to get a 3D photo of the skull of the top Collie sire.
  - b. We would try to get durable skull(s) produced from the 3D photos.
  - c. Would using existing skulls be feasible and durable?
2. How would we do the layering and what material could be utilized?
  - a. We are currently thinking just the layers of muscle.
  - b. Layering would be done in non-hardening clay.
  - c. Pre built muscle group templates may need to be created in advanced to speed up the group hands-on process.
3. What other visuals could we include to clarify the raw layer build?
  - a. Illustrations, handouts, and various visuals of the layers.
  - b. A live Collie could be used to show relationships.
4. What would this cost?
  - a. \$4,990 – See detail budget below.
5. Could we be confident that we would have a finished product ready in time?
  - a. Yes, after an actual "dress rehearsal" and a concept video, this presentation could become a reality. Time, however, is of the essence.

## CONCEPT VIDEOS

Video 1 – 8 minute summary of the muscle layering build

<http://youtu.be/fl5TW2oM1as>

Video 2 – 3 minute summary of product closer to finished.

<https://www.youtube.com/watch?v=GgxcBi1PBC8&feature=youtu.be>

BUDGET

<b>Skulls - Assumption 10 molds - Nancy</b>			
3D scanning and printing	\$2,860		
Molds - One at \$500 and Nine at \$100	\$1,400		
Shipping/transportation estimate	\$200		
Other costs?			
Tax estimate at 5%.	\$180		
<b>Total Skull Molds</b>	-	<b>\$4,640</b>	
<b>Seminar material for 10 groups – Leigh</b>			
Skull modeling clay -- 11.93 per group	\$119.30		
Modeling Knife -- \$5.00 per group	\$50.00		
Acrylic rolling pin -- \$4.00 per group	\$40.00		
6" x 9" cutting boards -- \$3.90 per	\$39.00		
Colored Pencils -- \$3.52 per	\$35.20		
Muscle diagrams -- \$5.00 per	\$50.00		
Other costs?			
Tax estimate at 5%	\$16.68		
<b>Total Seminar Hands on cost</b>	-	<b>\$350.18</b>	
<b>Total skull presentation costs</b>	-	-	<b>\$4,990.18</b>
<b>Other Meeting Expenses YTBD</b>			
Building rent			
Setup configuration			
Video			
Continental Breakfast and coffee			
Miscellaneous mailings, name tags...			
<b>Total Other meeting expenses</b>	-	<b>YTBD</b>	
<b>TOTAL SEMINAR COSTS</b>	-	-	<b>YTBD</b>

## PROJECT TIMELINE

	Start	Completion	Days	Task
1	10/8/2014	10/31/2014	22	Board approval of project and funding
2	11/1/2014	11/30/2014	30	3D Scanning and printing completion
3	12/1/2014	12/31/2014	30	First Mold built, shipped and delivered
4	12/1/2014	1/31/2015	60	Remaining 9 molds built, shipped and delivered
5	11/1/2014	02/29/2015	120	Mechanics worked out on group build and seminar finalized
6	3/8/2015	3/14/2015	150	CCA 2015

## CONCLUSION

So in conclusion we're anxious to get started, if we can dig up the funding.



## REFERENCE MATERIAL

1. If you're not familiar with 3d printing, this is pretty dazzling - Nancy.  
<https://www.youtube.com/watch?v=D3OfjYXUCU>
2. 3D laser scans and several solutions – Nancy  
<http://precisionpointinc.com/>
3. Unique way of showing a dog's skeletal structure - Nancy.  
<https://www.youtube.com/watch?v=HF5JVjKxev8>
4. Three videos of the anatomy of actual dog skull by vet students – Leigh.
5. <https://www.youtube.com/watch?v=9st4yAnH7W0&list=PLHY8jTr8DbBml eh3zpPII9o1b62YJj42Z&index=4>
6. <https://www.youtube.com/watch?v=01l8qOJmZR4&list=PLHY8jTr8DbBml eh3zpPII9o1b62YJj42Z&index=3>
7. <https://www.youtube.com/watch?v=OXaXgpPIGcl&index=2&list=PLHY8jTr8DbBml eh3zpPII9o1b62YJj42Z>
8. Fun video on canine anatomy using clay...Enjoy - Leigh.  
<http://www.youtube.com/watch?v=K7gwoGf6FLw>
9. Interesting but unfortunately, it is of a German Shepherd. - Leigh  
<http://www.biosphera.com.br/e-veterinary-dog-anatomy.asp>
10. Dog ear anatomy and examination  
<https://www.youtube.com/watch?v=TCoLZCTcBOo>
11. An Atlas of Animal Anatomy for Artists by W Ellenberger, H Dittrich & H Baum (pg 57-60 specifically skull, print version is darker) - 9 1/2" x 12" b/w drawings/etchings - Leigh  
<http://worldtracker.org/media/library/Art/Drawing/Ellenberger%20-%20Atlas%20Animal%20Anatomy%20For%20Artists.pdf>  
Easy-to-follow instructions accompany 288 detailed, accurate illustrations of horses, **dogs**, cats, lions, cattle, deer, and other creatures. Each animal is depicted in a full external view as well as in beneath-the-skin drawings of musculature and skeletal structure. This classic reference has been enlarged with plates from the works of Stubbs, Straus-Durckheim, and Cuvier and Laurillard.
12. Dog Anatomy Flash Cards by Bryan Edwards Publishing - 4 1/4 x 5 1/2" Flash Cards D5, D16, D17, & D18 deal with skull (side and above) - Leigh  
[http://www.amazon.com/dp/1878576178/ref=pe\\_385040\\_121528360\\_TE\\_dp\\_1](http://www.amazon.com/dp/1878576178/ref=pe_385040_121528360_TE_dp_1)  
The Dog Anatomy is a comprehensive reference tool covering the skeletal system, muscular system, joints & ligaments, and the 10 major organ systems of the dog. This set consists of 47 flash cards.  
I ordered and should be getting any day...

13. [Miller's Anatomy of the Dog 3 ed](http://www.amazon.com/dp/0721632009/ref=pe_385040_30332190_TE_3p_dp_1ously) - by Howard Evans Phd. - Leigh  
[http://www.amazon.com/dp/0721632009/ref=pe\\_385040\\_30332190\\_TE\\_3p\\_dp\\_1ously](http://www.amazon.com/dp/0721632009/ref=pe_385040_30332190_TE_3p_dp_1ously)

Updated to reflect expanded knowledge of the anatomy of the dog, this new edition describes and illustrates the specific morphology of the dog with some reference to other species. With eight new contributors, this text includes more in-depth understanding of the nervous system, fetal growth, bone formation, the lymphatic system, the organization of the brain, the structure of the eye and ear, and more! No other book on the anatomy of the dog has such up-to-date detail of structure as this third edition.

- [Dog Anatomy: A Coloring Atlas](http://www.amazon.com/dp/1893441172/ref=pe_385040_30332190_TE_3p_dp_i1) - by [R. Kainer](#) & [Thomas O. McCracken](#), spiral bound - Leigh  
[http://www.amazon.com/dp/1893441172/ref=pe\\_385040\\_30332190\\_TE\\_3p\\_dp\\_i1](http://www.amazon.com/dp/1893441172/ref=pe_385040_30332190_TE_3p_dp_i1)

Updated to reflect tremendously expanded knowledge of the anatomy of the dog, this new edition describes and illustrates the specific morphology of the dog with some reference to other species. With eight new contributors, this text includes more in-depth understanding of the nervous system, fetal growth, bone formation, the lymphatic system, the organization of the brain, the structure of the eye and ear, and more! No other book on the anatomy of the dog has such up-to-date detail of structure as this third edition.

#### Advanced Tool Set

Klay gun extruder

- Klay gun handle
- D2 wire loop
- Allen ball driver
- Clay cutting mat (8.5 x 12" with 1" grid)



By doing this I am also hoping to get a feel how much the cost in clay and equipment will be as well as time. Leigh

## **Nancy McDonald regarding Skull budget – October 2**

I made this selfie this afternoon after visiting [customizations.co](http://customizations.co) - as you might tell, there are fewer snakes than before.

They can make ANYTHING. And I mean ANYTHING. They showed me about 50 different sample materials ranging from sponges to a variety of durable resins in endless colors, flexibility and opacity. The products from the molds he made were amazing in detail. He showed me a pistol grip he'd made and the detail was well beyond expectations I think we'd have for the skull. I left there very excited at what he could do and the quality of the products he'd made.

He estimated the cost to create a mold from a 3d print would be about \$500, and each model would be about \$100. I was amazed he could do it for that. The fine print is that it's a time and labor intensive process and the pouring, curing and unmolding process is about 18 hours per model, so if we wanted 25 made say, by Feb 1, we would have to have the 3d print to him by January 1. Of course, we might not need that many for the seminar, but probably need to build out a timeline of deadlines to get things done.

As you know, that is a very tight schedule to get approved through CCA in time for this year's seminar ... we might could deal with using the 3d models and have the others done for people to rent or buy later.

Collie Expressions

<http://www.collieexpressions.com>

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## **Nancy McDonald – Regarding budget 3D printing and molds – October 1**

There are lots of ways to proceed with this project and it's very difficult to pin down a price.

I've been quoted \$75-\$800-\$2,200 to scan the skull and that process varies from a hand-held scanner to a CT/MRI version. The differences are that the lower end would have less detail and probably mostly capture outside surfaces, and omit elements such as the brain cavity or sinuses.

I've been quoted from \$160- \$350 per 3d print. There is economy of scale going from 1 to multiples as several can be printed at the same time.

I've been quoted from \$300-\$2,000 to create a silicone mold, which can be used to create "up to" 25 copies before it is worn out.

I've been quoted from \$75-\$200 each for molded copies

My thought is that we should estimate the high end scan (\$2,200) as technology is so rapidly advancing that it would be worthwhile to have as much detail captured as possible as printers improve in their accuracy.

My estimate for 5 3-d prints would be \$1,500.

At this point, it doesn't seem that molded copies would give us much of a savings, so we could use an estimate of \$300 each, and further refine how to get that done should we want to go to 25+

Among others, I spoke to Steve Lucero who is the facilities manager of the biomechanical engineer department at UC-Davis. He was involved in creating the 3d skull prototype for Lad. The estimates I'm proposing are based mostly on my conversation with him. There are lots of folks out there that say they can do this kind of job, but with all due love and respect, I'm not really as comfortable with the committee's level of sophistication to understand all we need to know to ensure we're giving the project the top quality service it needs. UC-Davis does do this kind of work commercially and think it would be wise to propose doing the work with them. I do believe there are other universities that could also provide the same level of competence.

I do have an appointment tomorrow with a mold/model maker and will keep investigating.

So ... at this point, as a starting point for a budget ...

**5 3d models:**

Scan \$2,500  
Print 5 3d models \$1,800  
Shipping, miscellaneous \$200

Total \$4,500

**20 models ... either 3d printed or molded.**

Scan \$2,500  
Print 20 3d models \$7,200 (\$360 each)  
Shipping, miscellaneous \$500

Total \$10,200

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### **Leigh Cohen – Regarding budget for skull layering build – Oct. 01**

I spoke with the Museum of Osteology in Oklahoma City. Unfortunately, the classroom space they have available is not large enough to hold over 28-30 people. 🍏

Here are the numbers I came up on the additional prices for the materials needed.

#### Skull Modeling with Clay: Approximate Cost per Person

1 - 4.5 lb. bar of modeling clay = \$11.93

1 Kemper Modeling Knife = \$5.00

1" dia. x 8" long acrylic rolling pin = \$4.00 (if we cut them ourselves) \$4.00

12"x18" cutting boards = \$7.79 (they could be cut in half to 9"x12" for \$3.90 each) \$3.90

Crayola Colored Pencils (Box of 10 Asst.) = \$3.52 \$3.52

Seminar Print Handouts \*\* \$5.00

TOTAL \$33.35\*

#### Skull Modeling with colored Pencil: Approximate Cost per Person

Crayola Colored Pencils (Box of 10 Asst.) = \$3.52 \$3.52

Seminar Print Handouts \*\* \$5.00

TOTAL \$8.52\*

(Note: \* prices do not reflect tax and shipping)

(Note: \*\* price if Leigh does the printing)

All the best,

### **Mary Robischon – Regarding conversation with Mike Cheatham on concept – Sept 2**

Spoke to Mike today, She thinks the idea is an excellent one. However, she suggested we do more degree of fault. I.E. Show perfection and show how easy it is to modify that perfection. She also said the clay is good but not all people are comfortable with the medium. A major concern is the transfer of learning.

She recommended we speak with Brenda as well.

Also spoke with my school's art department. They said the 3-d printer would be great for what we would like to accomplish. Their suggestion is to see if we could find a stock item (skull) rather than scanning (this would save money). We tried Thingiverse & evolution but to no avail. Cost could be prohibitive.