



# Mouse Arthritis Models



## What is collagen-antibody induced arthritis?

- Collagen-antibody induced arthritis (CAIA) is a rapid model of arthritis using monoclonal antibodies (mAbs) against type II collagen. A single injection induces arthritis in mice within days as compared to weeks with the CIA model.

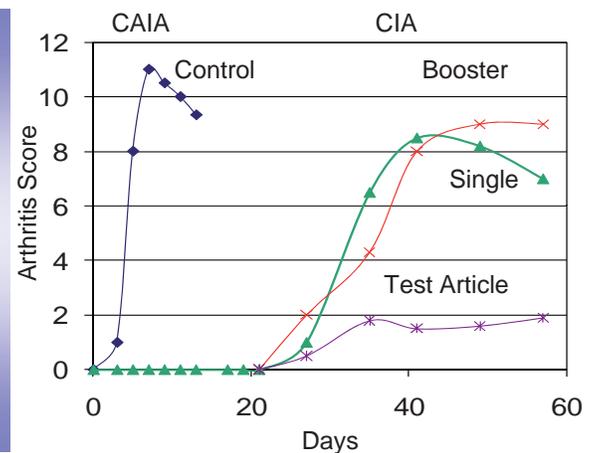
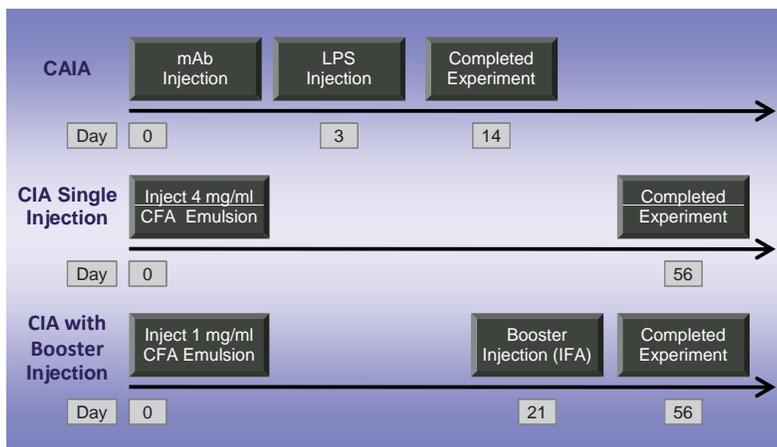
## What is collagen-induced arthritis?

- Collagen-induced arthritis (CIA) shares both immunological and pathological features with human rheumatoid arthritis (RA), therefore it is used extensively as a model to study the pathogenesis of RA and for testing therapeutics.

### General Comparison: CAIA vs. CIA

	CAIA	CIA
Experimental Time	7-14 days	6-8 weeks
Mouse Strains	C57BL/6, DBA/1, Balb/c, Transgenic, more	DBA/1, C57BL/6
Consistent Incidence	100%	60-90%
Consistent Severity	10-16	6-12

### Workflow Chart



### Cost Comparison

	CAIA (2 week study)		CIA (8 week study)	
Animals:	25 animals:		50 animals	
DBA/1 mice (\$36/mouse)	5 animals x 5 groups	\$900	10 animals x 5 groups	\$1,800
Perdiem (\$30/cage/week)	5 cages x 3 weeks	\$450	10 cages x 9 weeks	\$2,700
Arthritis Induction	mAb cocktail (40 mg)	\$2,755	Collagen plus adjuvant (with booster injection)	\$249
Emulsion Preparation	-----	-----	1 hour x 2 injections	\$100
Immunization Injection	\$4/animal x 2 injections	\$200	\$4/animal x 2 injections	\$400
Test Article Treatment	\$4/animal x 5 injections	\$500	\$4/animal x 20 injections	\$4,000
Scoring	\$4/animal x 5 scores	\$500	\$4/animal x 7 scores	\$1,400
<b>Total</b>		<b>\$5,305</b>		<b>\$10,649</b>



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## Materials Required for CAIA Experiment

The mAb cocktail used for the induction of arthritis in mice is a mixture of 5 clones. Two of the five clones recognize individual epitopes clustered within the 83 amino acid peptide fragment called LyC-2 (291-374) and three clone recognizes the 167 amino acid peptide fragment called LyC-1 (124-290) of the CB11 fragment (124-402) of type II collagen. These epitopes share common amino acid sequences with many different species of type II collagen including chicken, mouse, rat, bovine, porcine, monkey, and human.

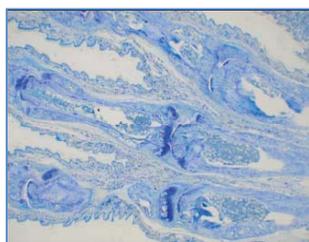
Description	Quantity	Catalog #
Arthrogen-CIA <sup>®</sup> Monoclonal Antibody Cocktail, 5-Clone Cocktail Kit	10 mg	53010
Arthrogen-CIA <sup>®</sup> Monoclonal Antibody Cocktail, 5-Clone Cocktail Kit	40 mg	53040
Arthrogen-CIA <sup>®</sup> Monoclonal Antibody Cocktail, 5-Clone Cocktail Kit	100 mg	53100
Lipopolysaccharide from E. coli 0111:B4	0.5 mg/ml x 5 ml	9028

## Materials Required for CIA Experiment

Adjuvant			Type II Collagen		
Complete Freund's Adjuvant (CFA) is essential for the induction of arthritis in mice. Unlike rats, mice do not develop arthritis by immunization with type II collagen emulsified with Incomplete Freund's Adjuvant (IFA).			Highly purified type II collagen prepared under a defined protocol should be used, as contaminants can result in unreliable data.		
Description	Quantity	Catalog #	Description	Quantity	Catalog #
IFA	5 ml	7002	Chick Type II	10 mg	20011
CFA, 1 mg/ml	5 ml	7008	Chick Type II, 2 mg/ml	5 ml	20012
CFA, 2 mg/ml	5 ml	7009	Bovine Type II	10 mg	20021
CFA, 3 mg/ml	5 ml	7015	Bovine Type II, 2 mg/ml	5 ml	20022
CFA, 4 mg/ml	5 ml	7001	Porcine Type II	10 mg	20031
CFA, 5 mg/ml	5 ml	7023	Porcine Type II, 2 mg/ml	5 ml	20032
			Human Type II	1 mg	20051
			Human Type II, 2 mg/ml	0.5 ml	20052



CAIA in DBA/1 Mouse



CIA Mouse Forepaw