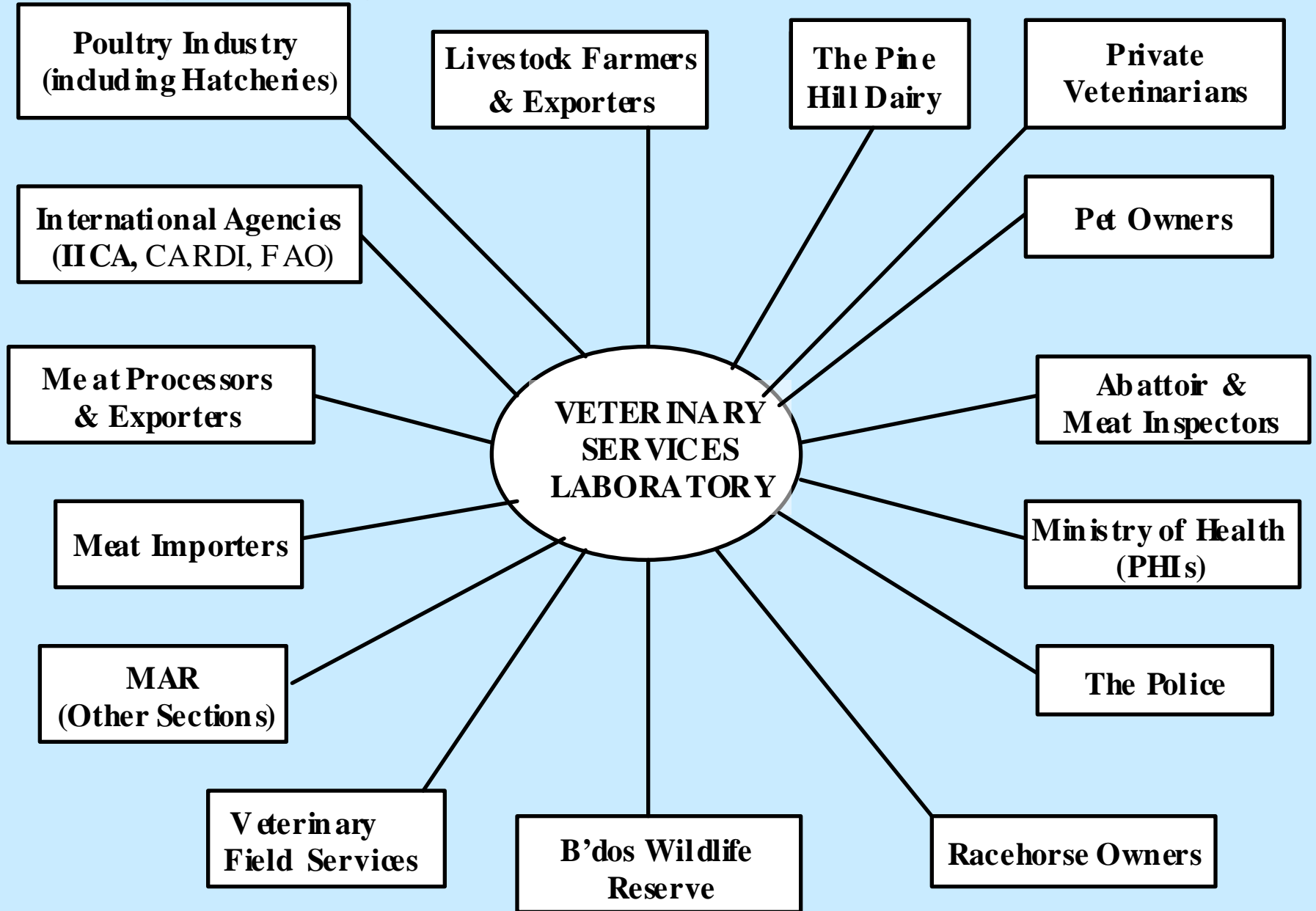


# Using Charm II 7600 For Residue Testing in Meats in Barbados



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Ministry of Agriculture & Rural Development, Barbados**

# VSL's Client Base



# Sample Submission - Meat

↳ Lean Muscle Tissue

↳ Fat free

↳ No highly processed meat

↳ Minimum of 12 grams per group of tests

↳ Clearly labelled ziplock bag

↳ Keep samples cool or frozen

↳ Submit samples early

↳ Information required

# Sample Submission - Milk

- Minimum of 40 mls per group of tests
- Clearly labelled, clean container
- Keep samples cool or frozen
- Submit samples early
- Information required

# **Charm II 7600 Testing System**

**∩ “The only comprehensive testing systems in use in FDA laboratories and government testing laboratories worldwide”**

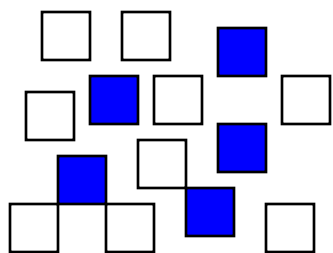
∩ FDA approved tests for milk

∩ AOAC-RI approved tests for milk

# The Charm Test

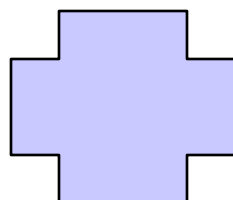
- ⊗ Is a microbial (or antibody) receptor assay
- ⊗ Uses exempt quantities (very small amounts) of a radioactive tracer
- ⊗ Specific “binder” tablet used for each family of antibiotics
- ⊗ Sample with specific antibiotic binds to receptor
  - *e.g. In a sample containing Tetracycline and Gentamycin, only Tetracycline will bind to the Tetracycline receptor*
- ⊗ If sample contains little or no antibiotic, then labeled specific tracer will bind to “binder”

# Principle of the Charm Test



**Sample**

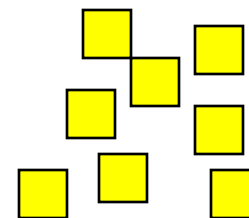
*may contain antibiotic*



**Binder**



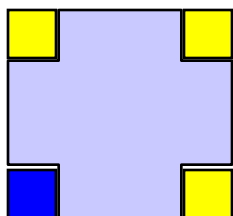
**Antibiotic**



**Tracer**

*labelled antibiotic*

## NEGATIVE REACTION

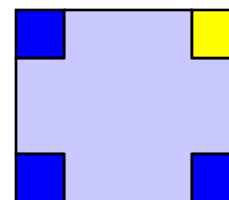


*More labelled antibiotic bound*

*Count is high*

*Sample is **NEGATIVE***

## POSITIVE REACTION



*Little or No labelled antibiotic bound*

*Count is low*

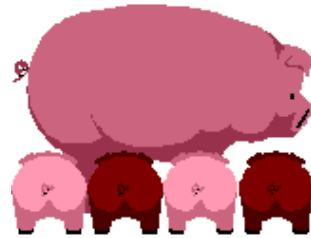
*Sample is **POSITIVE***

# Test Method

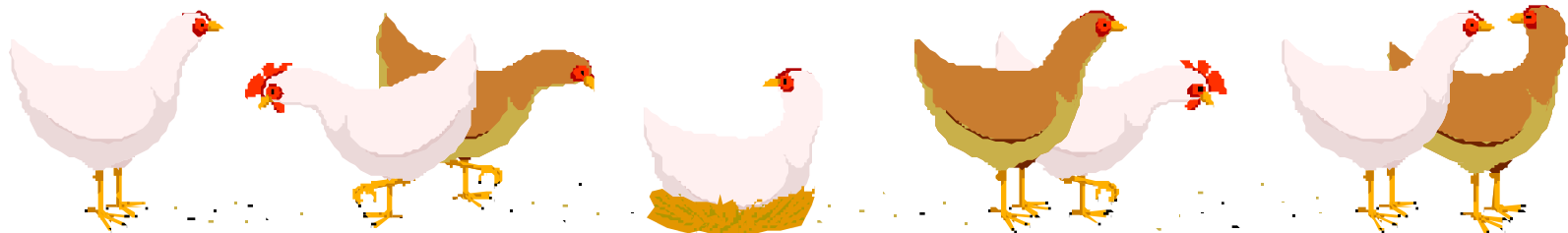
- Usually single test done per sample per antibiotic
- Performance monitoring is done before actual samples are tested
- Software “flags” suspect samples and requests a retest
- Suspect samples are retested with positive and negative controls



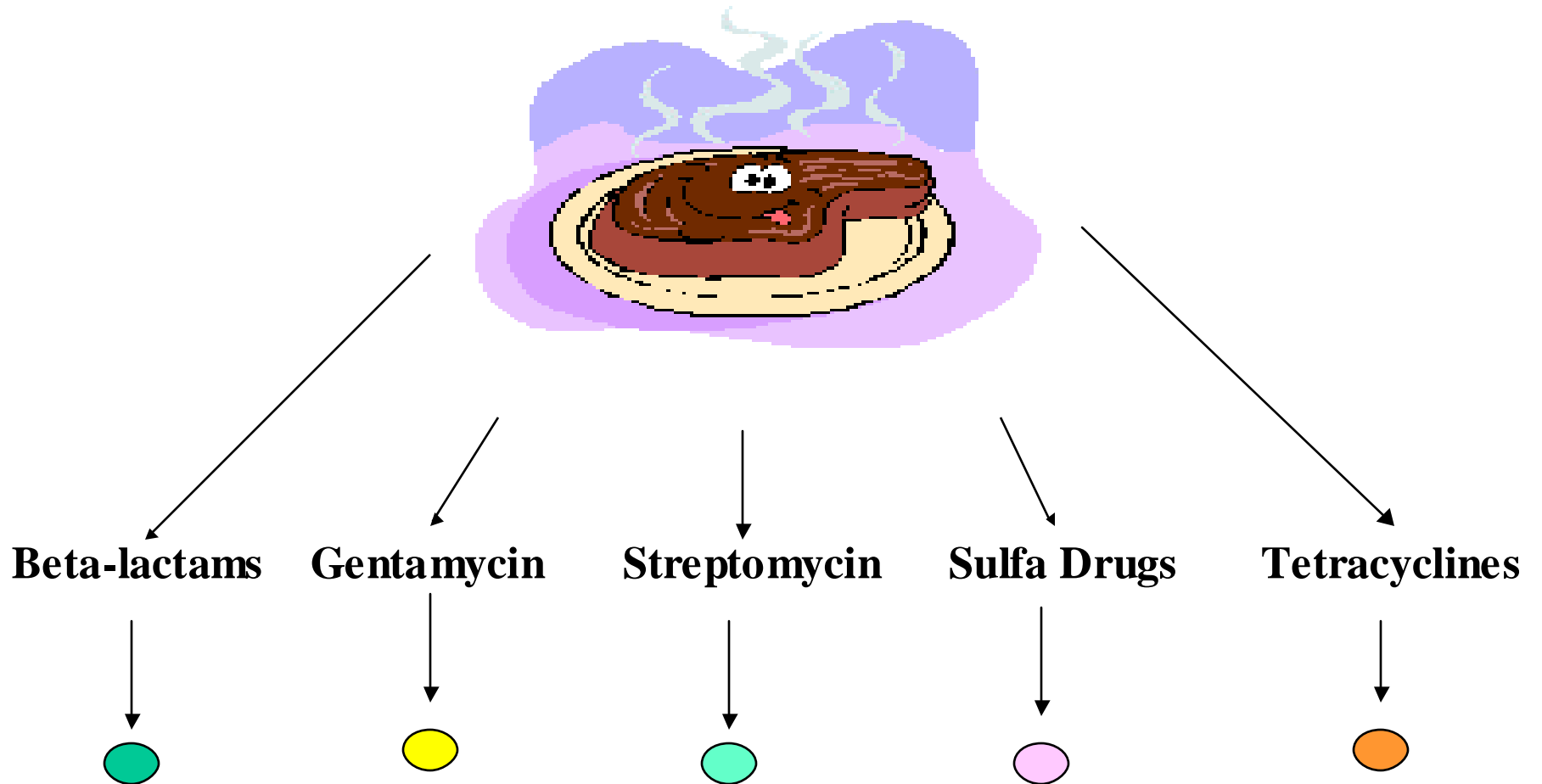
# Antibiotics commonly used to treat animals



- ★ Beta-lactams *e.g. Penicillin*
- ★ Aminoglycosides: *Gentamycin & Streptomycin*
- ★ Sulfonamides or Sulfa drugs *e.g. Sulfamethoxazole*
- ★ Tetracyclines *e.g. Oxytetracycline*

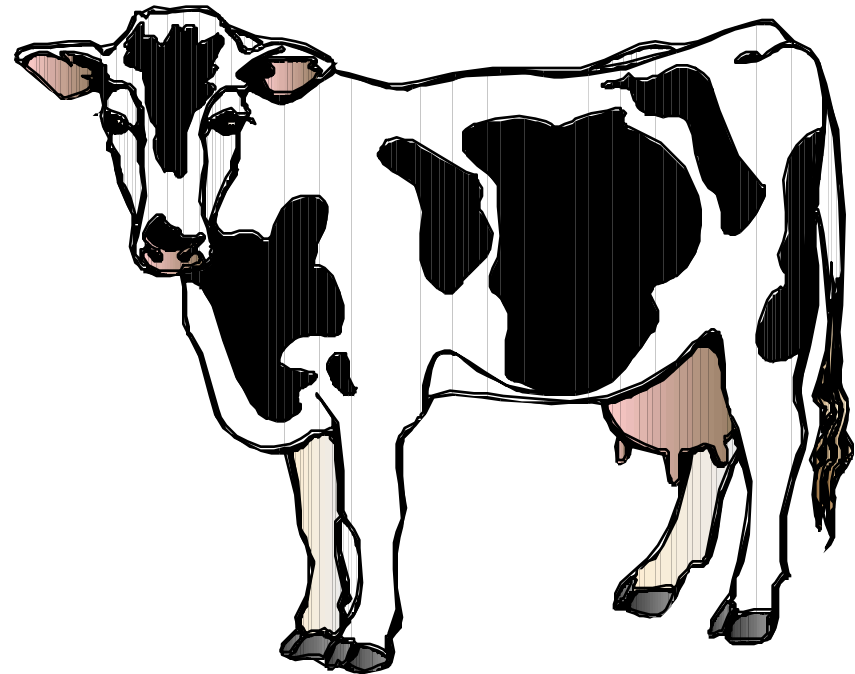


# One Meat sample generates 5 tests

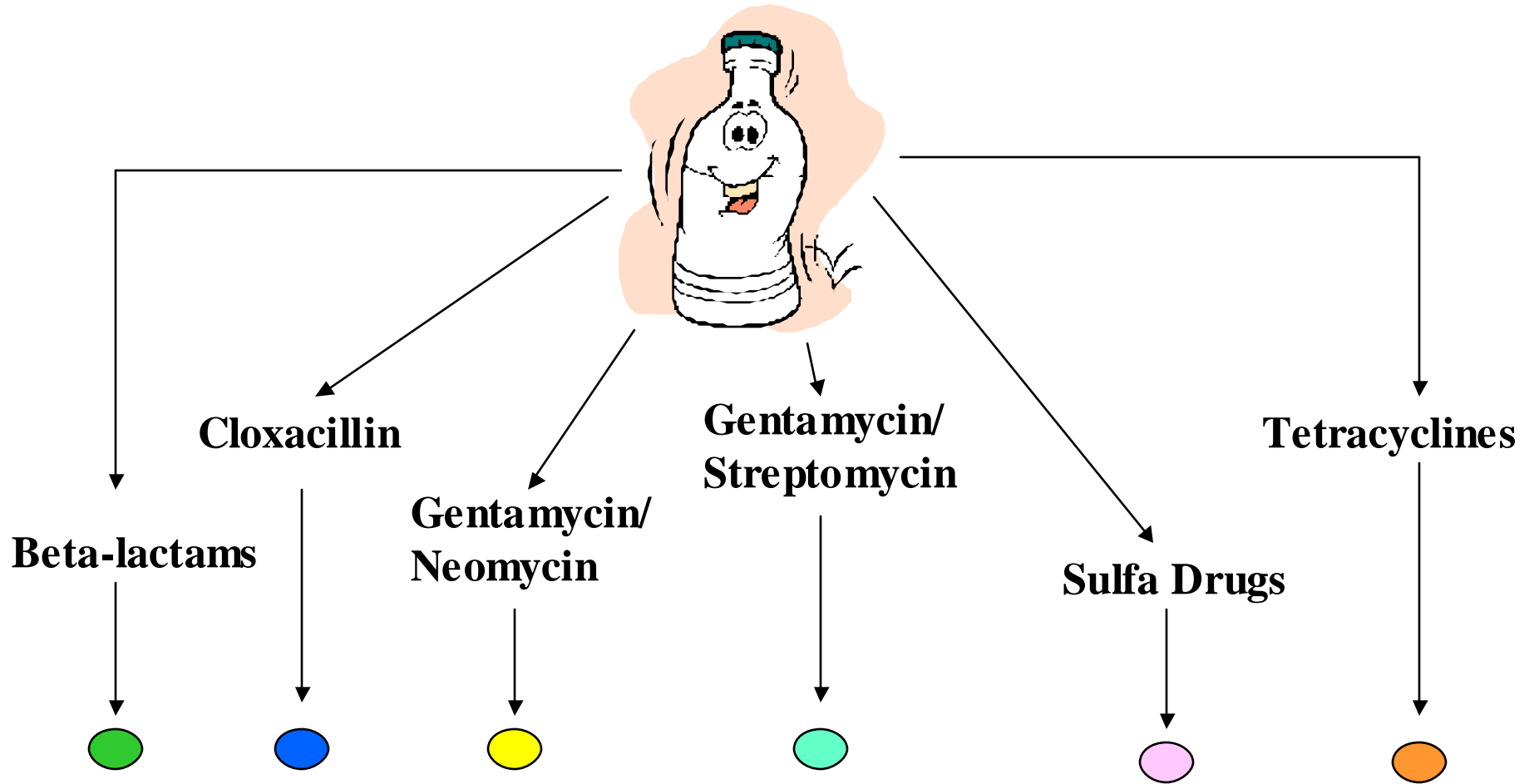


# Antibiotics commonly found in Milk

- ★ Beta-lactams & Cephalosporins
- ★ Cloxacillin
- ★ Gentamycin
- ★ Neomycin
- ★ Streptomycin
- ★ Tetracyclines



# One milk sample generates 6 tests



# Charm Sciences ROSA Test



↳ **Rapid One Step Assay**

↳ **ENROFLOX Test** - a quick test for Enrofloxacin detection at MRL (Maximum Residue Limit) in chicken muscle tissue.

↳ **Sensitivity and Selectivity—Concentration Response for Enrofloxacin in Tissue**

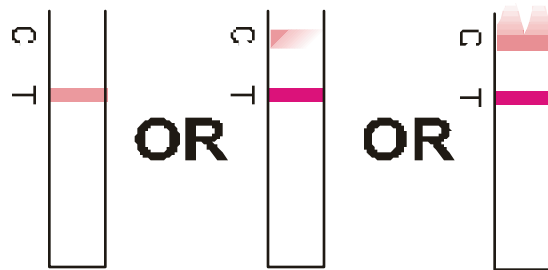
Drug	MRL ppb (parts per billion)	Tissue Concentration ppb	Percent Positive
Enrofloxacin	30	30	100%
		0	0%

# ROSA Principle - Lateral Flow

- ③ 300ul of sample extract is added to the sample well.
- ③ The extract is absorbed by the orange sponge and transferred to the porous paper.
- ③ As the test is incubated the extract travels up the paper and picks up the purple indicator beads which are located just above the orange sponge.
- ③ These beads are going to bind either to the test line (will develop next to the T) or the control line (located further up the strip next to the C) .

# Results

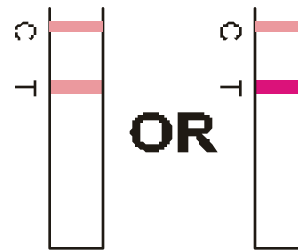
## INVALID



### ***Do NOT Read***

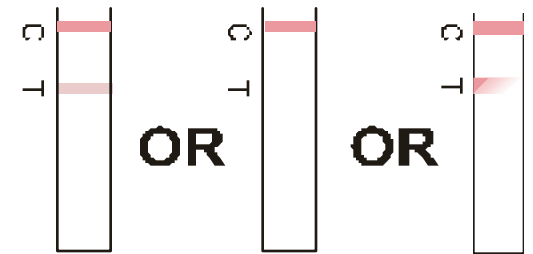
Control line did not develop.  
Discard and test again.

## NEGATIVES



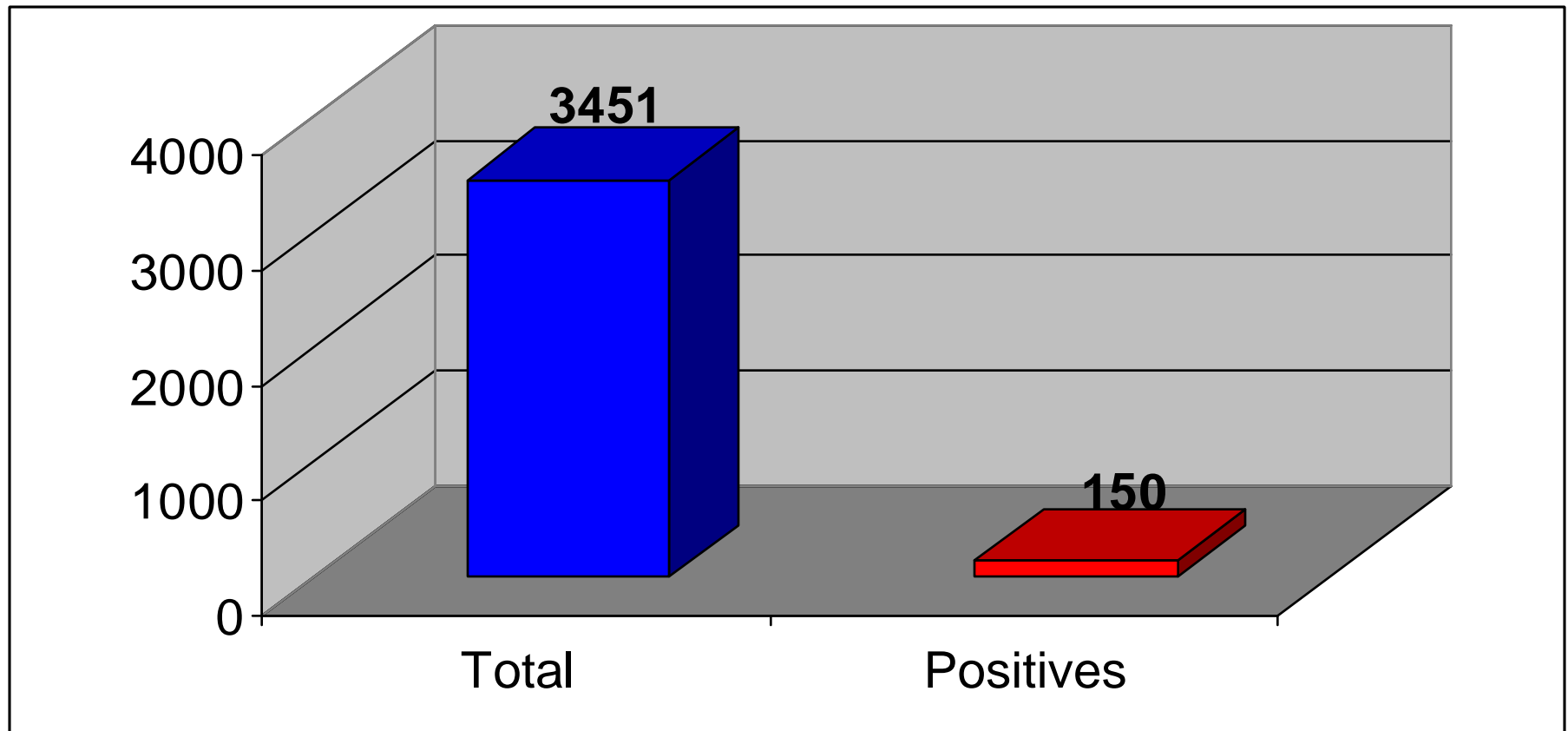
If the sample does not contain Enrofloxacin above the safe levels then the beads can bind to the test line resulting in a darker test line than control line for negative samples.

## POSITIVES



If sample contains Enrofloxacin above the safe levels these antibiotics bind to the indicator beads and the beads slide past the test line. This results in a lighter test line than control line for positive samples.

# Total Number of Tests and Positives November 1996 - March 31st 2002





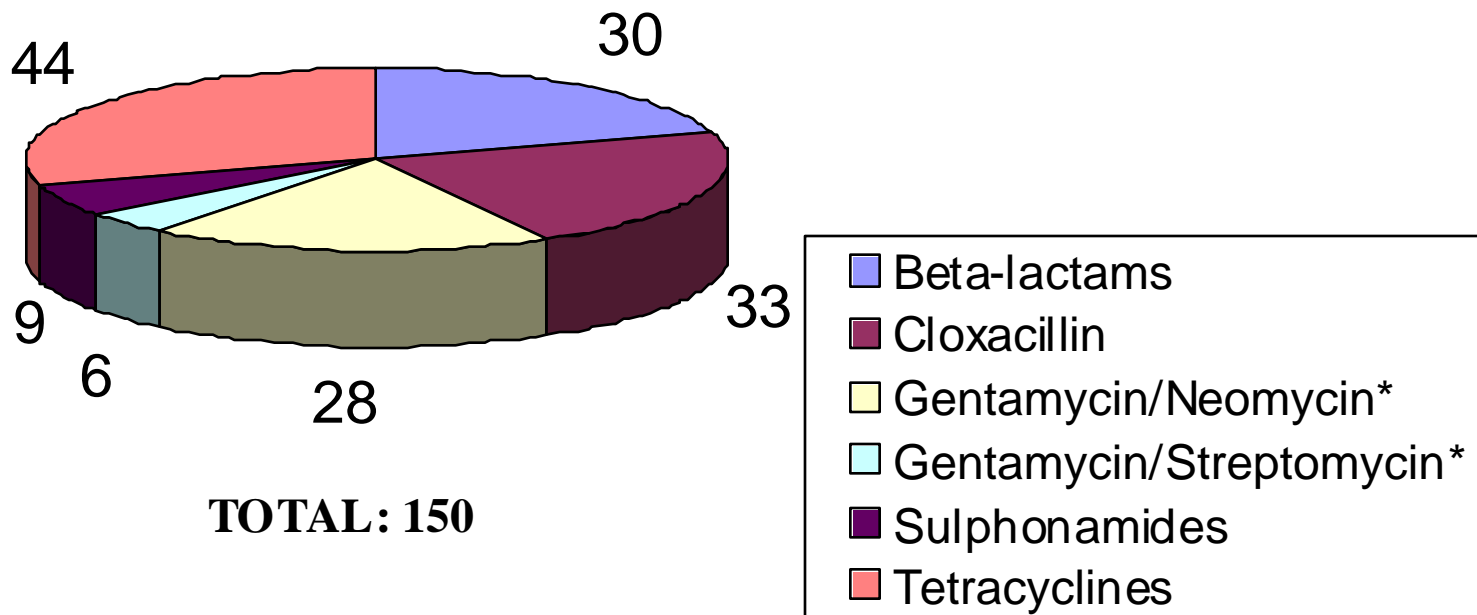
# Total Number of Tests November 1996 - March 31st 2002 By sample type

	1996 -1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	TOTAL
<i>Milk</i>	0	235	602	524	444	492	<i>2297</i>
<i>Chicken</i>	8	2	12	283	202	331	<i>838</i>
<i>Turkey</i>	0	0		5	20	25	<i>50</i>
<i>Pork</i>	10	0	12	45	18	0	<i>85</i>
<i>Beef</i>	4	6	4	0	0	0	<i>14</i>
<i>Mutton</i>	0	0	0	10	0	0	<i>10</i>
<i>Eggs</i>	0	0	0	50	3	104	<i>157</i>
<b>TOTAL</b>	<i>22</i>	<i>243</i>	<i>630</i>	<i>917</i>	<i>687</i>	<i>952</i>	<b><i>3451</i></b>

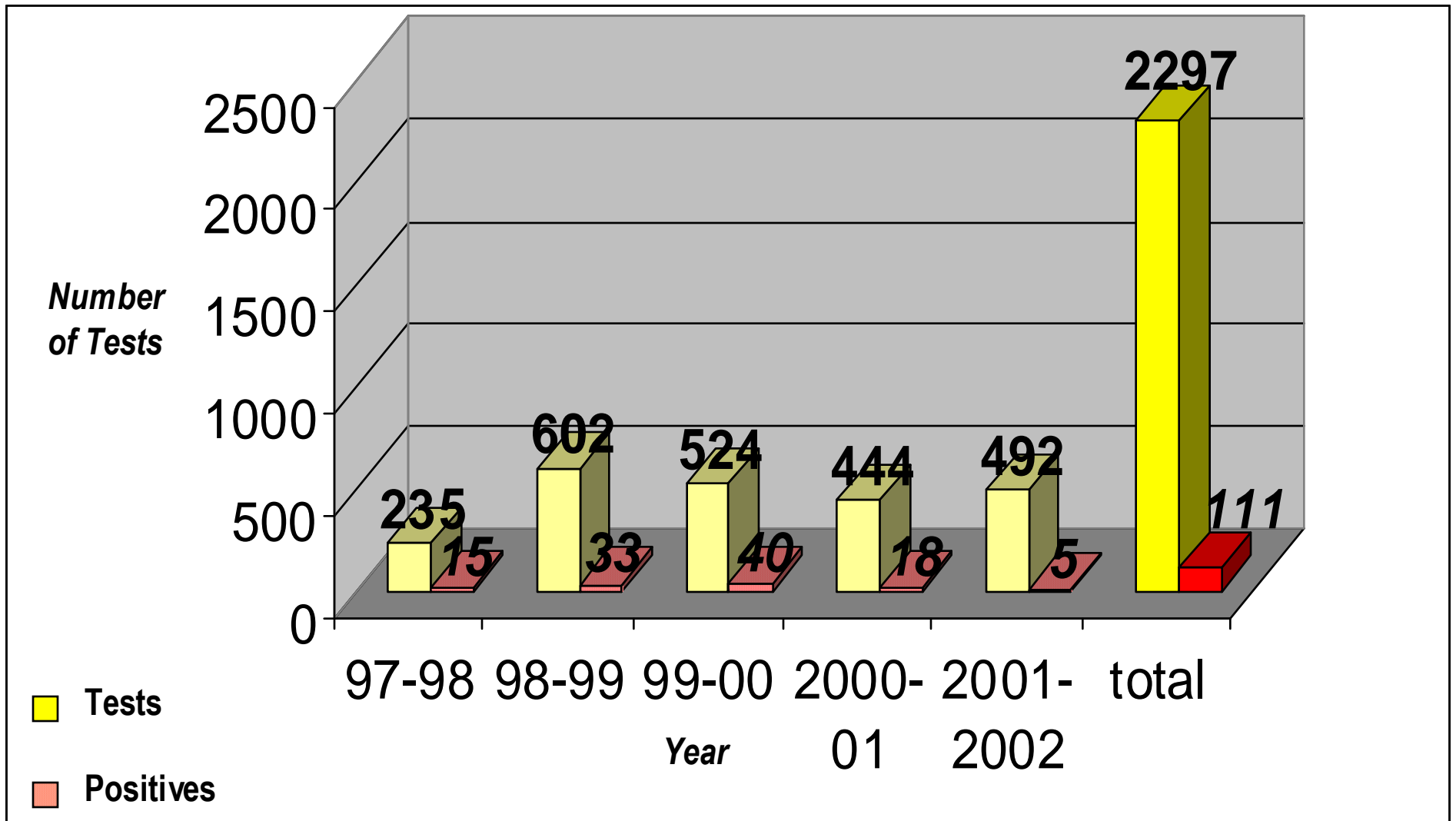
# Total Number of Positives November 1996 - March 31st 2002 By sample type

	1996 -1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	TOTAL
<i>Milk</i>	0	15	33	40	18	5	111
<i>Chicken</i>	1	0	1	5	3	6	16
<i>Turkey</i>	0	0	0	0	1	1	2
<i>Pork</i>	2	0	1	4	3	0	10
<i>Beef</i>	4	0	1	0	0	0	5
<i>Mutton</i>	0	0	0	0	0	0	0
<i>Eggs</i>	0	0	0	0	0	6	6
<b>TOTAL</b>	<b>7</b>	<b>15</b>	<b>36</b>	<b>49</b>	<b>25</b>	<b>18</b>	<b>150</b>

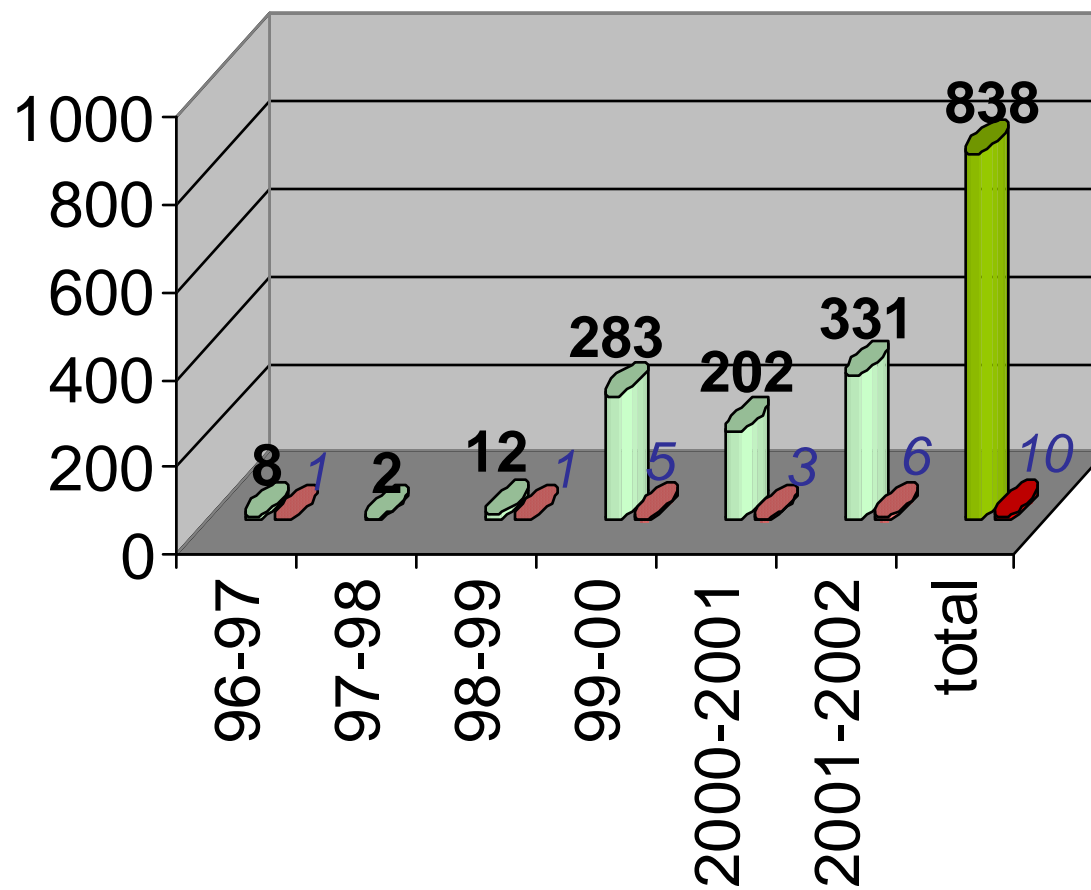
# Number of Positives November 1996 - March 31st 2002 By Antibiotic type



# Total Number of Tests and Positives for Milk April 1st 1997 - March 31st 2002



# Total Number of Tests and Positives for Chicken April 1st 1997 - March 31st 2002



# Total Number of Tests and Positives for Eggs April 1st 1999 - March 31st 2002

