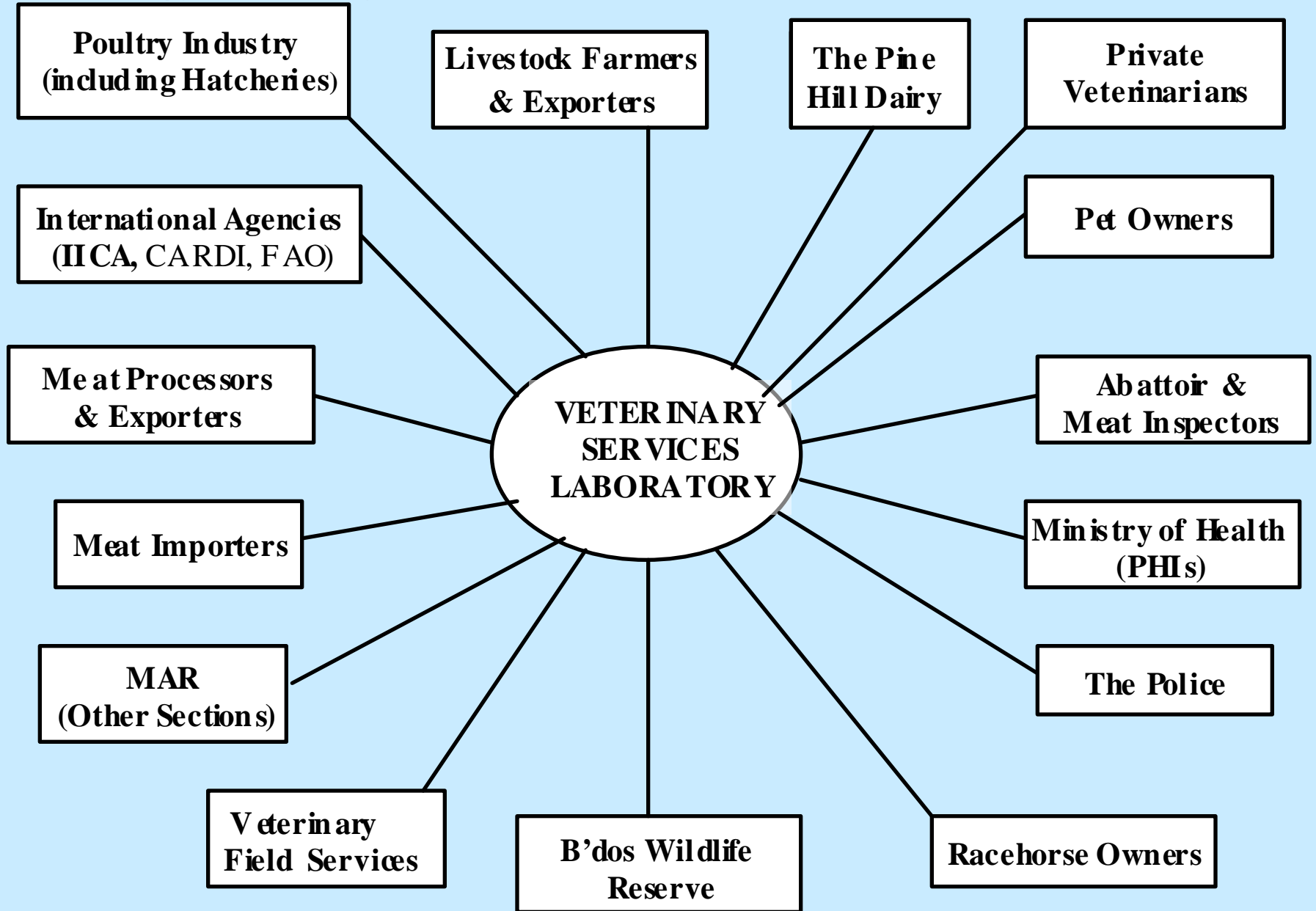


Using Charm II 7600 For Residue Testing in Meats in Barbados



**Dr Trevor King/ June Roach, Vet Services Lab (VSL)
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”**

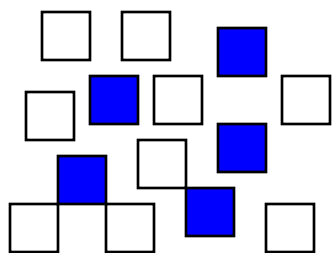
∩ FDA approved tests for milk

∩ AOAC-RI approved tests for milk

The Charm Test

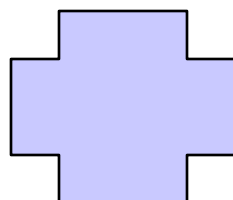
- ⊗ Is a microbial (or antibody) receptor assay
- ⊗ Uses exempt quantities (very small amounts) of a radioactive tracer
- ⊗ Specific “binder” tablet used for each family of antibiotics
- ⊗ Sample with specific antibiotic binds to receptor
 - *e.g. In a sample containing Tetracycline and Gentamycin, only 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

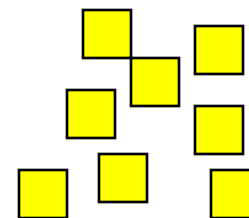
may contain antibiotic



Binder



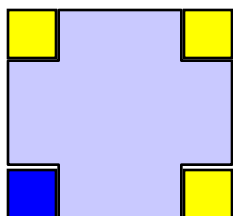
Antibiotic



Tracer

labelled antibiotic

NEGATIVE REACTION

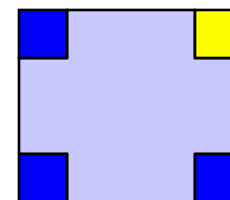


More labelled antibiotic bound

Count is high

*Sample is **NEGATIVE***

POSITIVE REACTION



Little or No labelled antibiotic bound

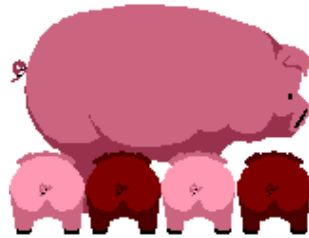
Count is low

*Sample is **POSITIVE***

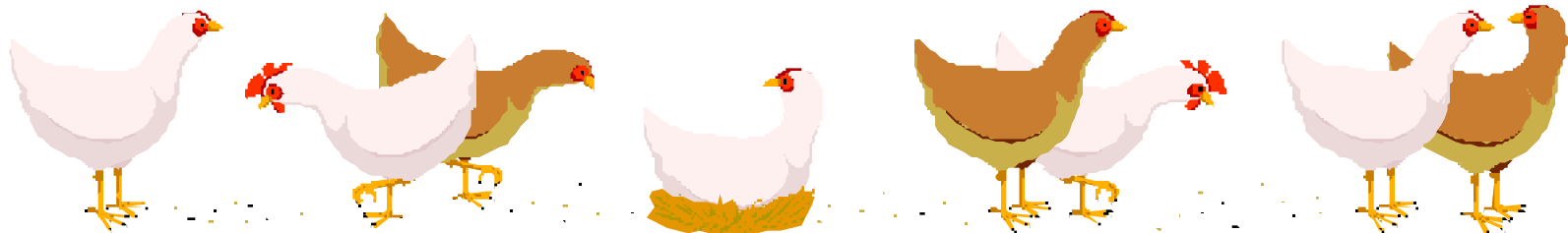
Test Method

- 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

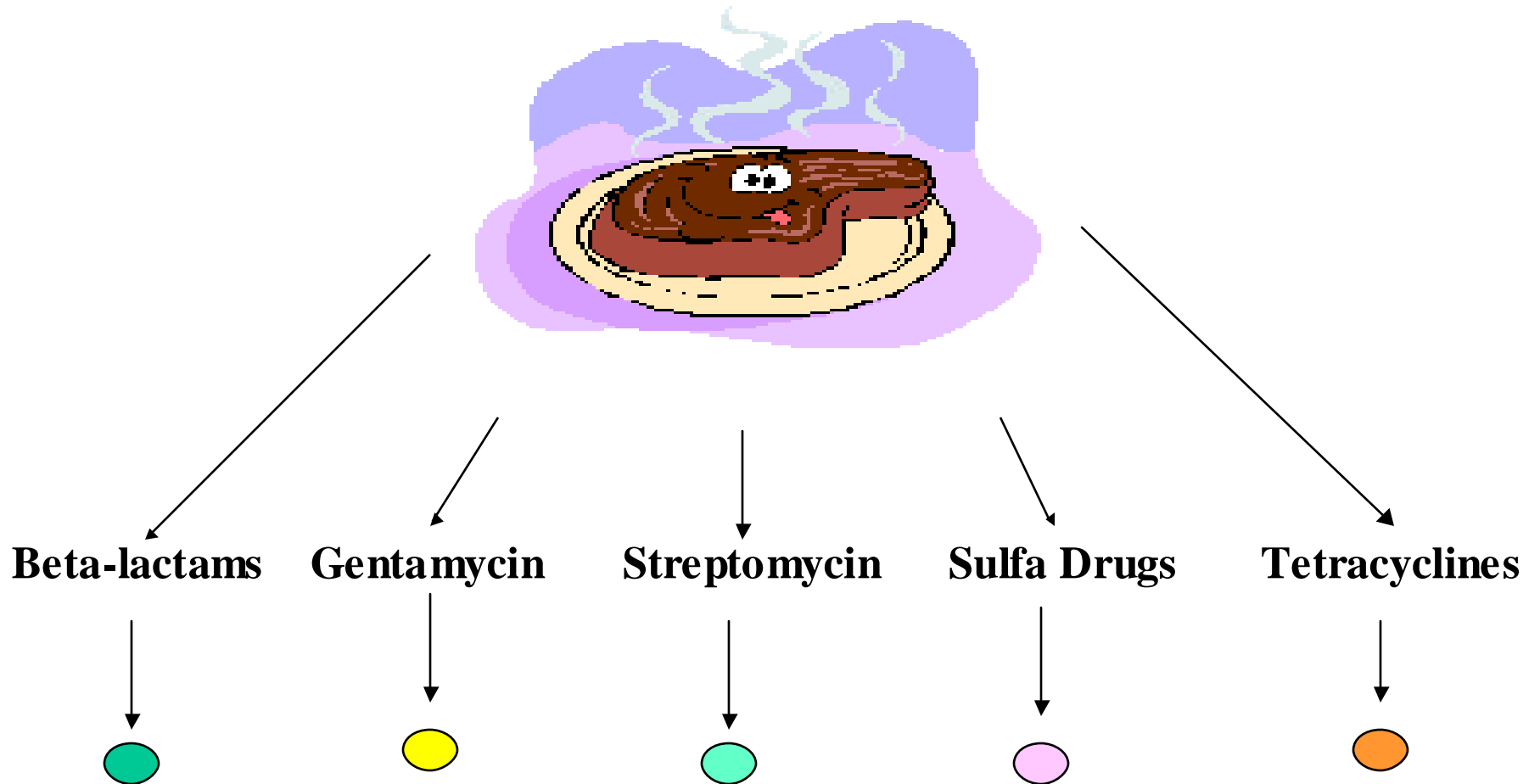
Antibiotics commonly used to treat animals



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

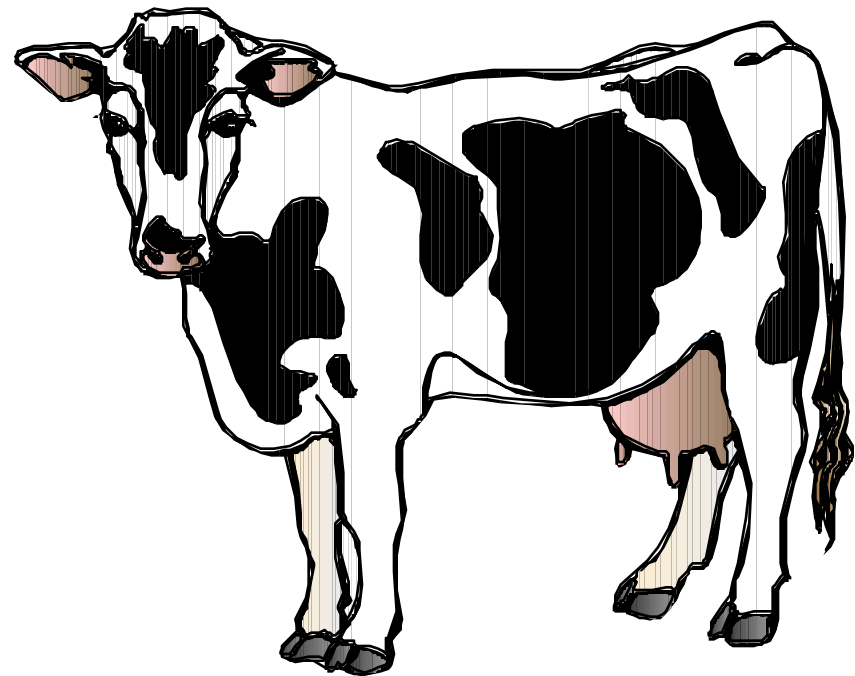


One Meat sample generates 5 tests

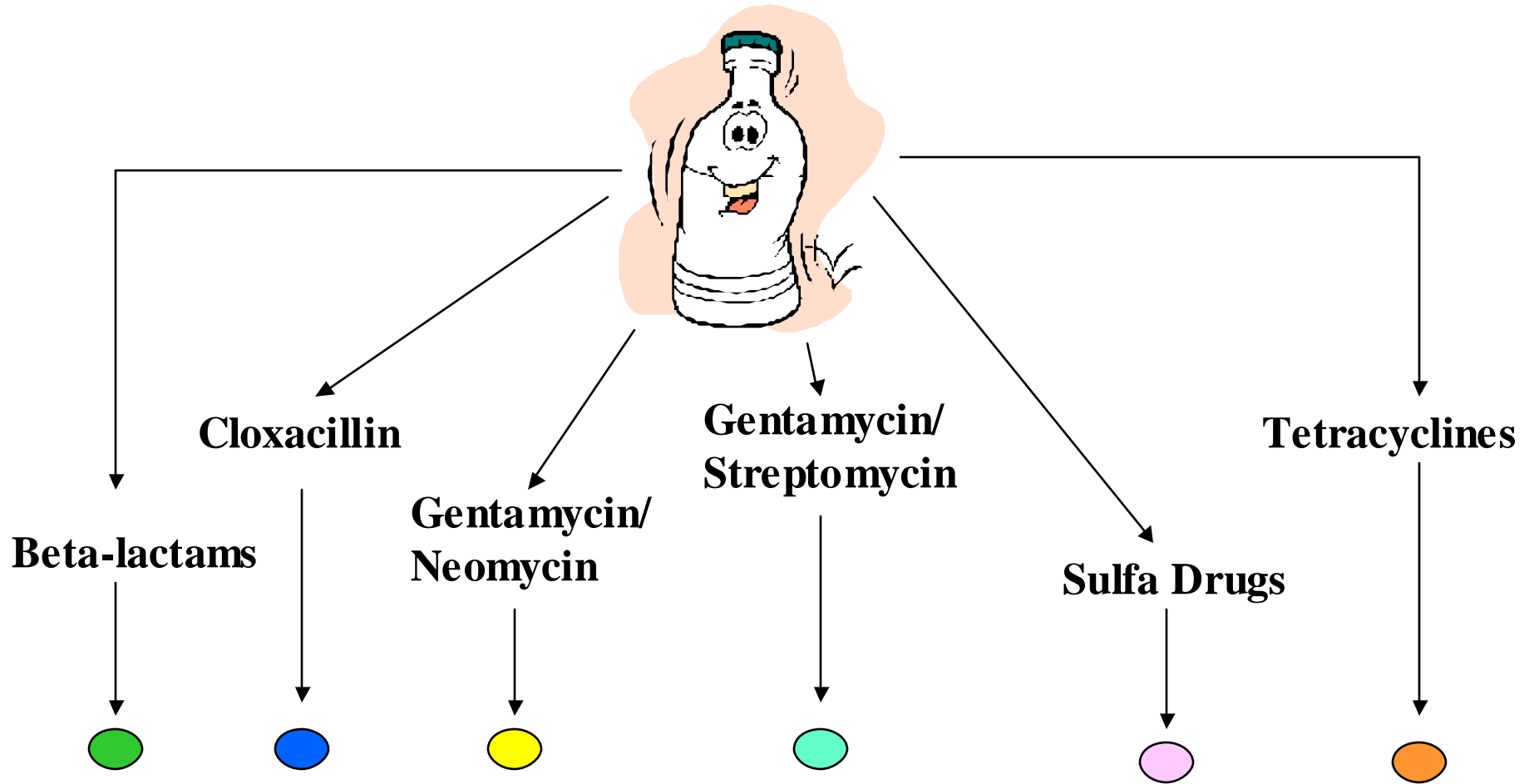


Antibiotics commonly found in Milk

- ★ 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.

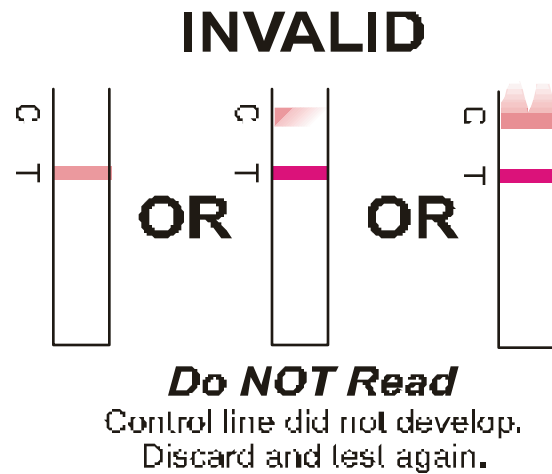
↳ **Sensitivity and Selectivity—Concentration Response for Enrofloxacin in Tissue**

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

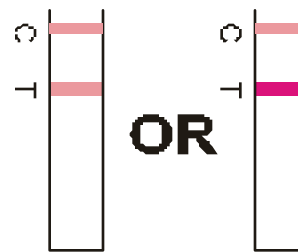
ROSA Principle - Lateral Flow

- ⑥ 300ul of sample extract is added to the sample well.
- ⑥ The extract is absorbed by the orange sponge and transferred to the porous paper.
- ⑥ 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.
- ⑥ 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

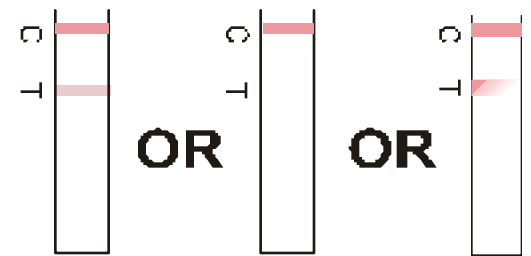


NEGATIVES



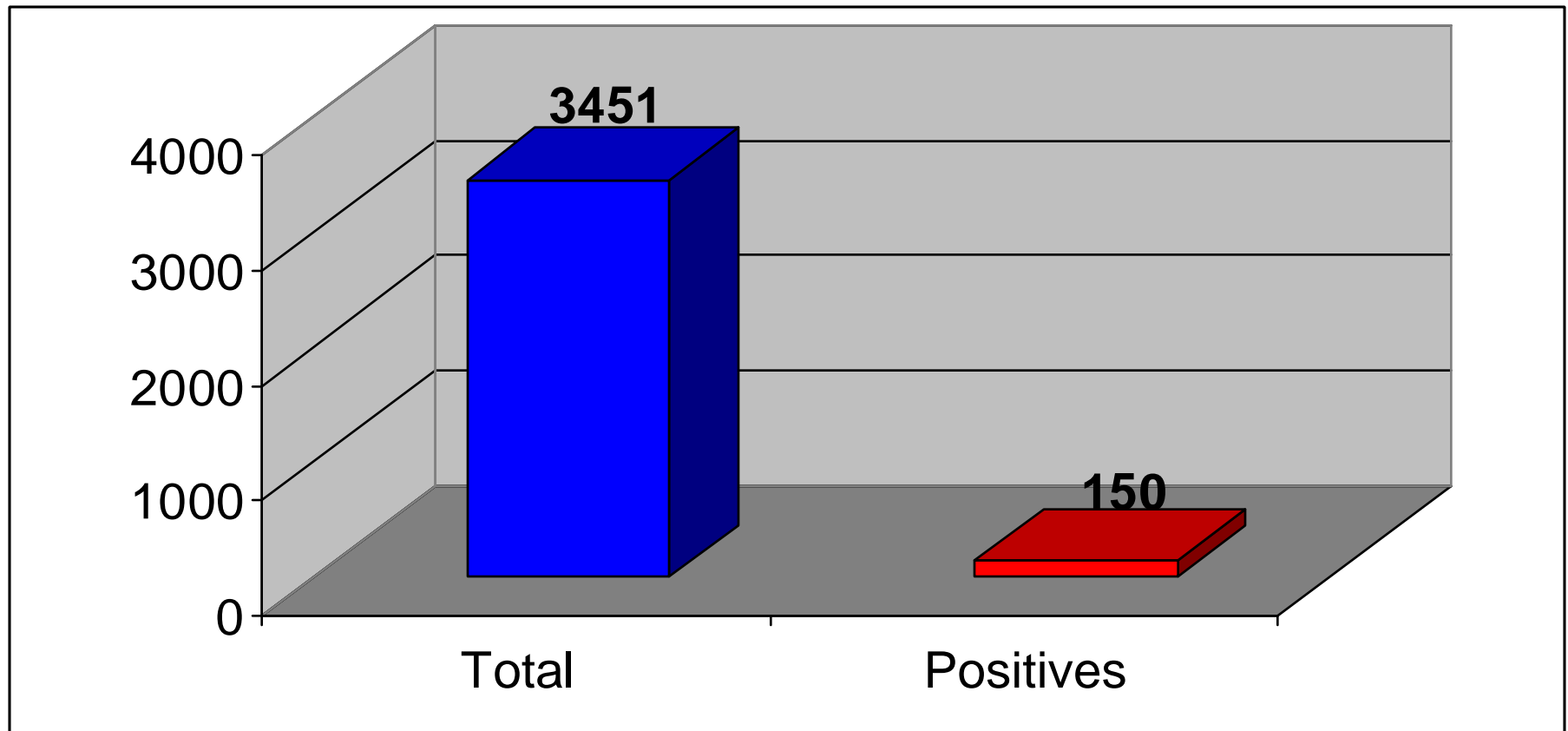
If the sample does not contain Enrofloxacin above the safe levels then the beads can bind to the test line resulting in a darker test line than control line for negative samples.

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>
TOTAL	<i>22</i>	<i>243</i>	<i>630</i>	<i>917</i>	<i>687</i>	<i>952</i>	<i>3451</i>

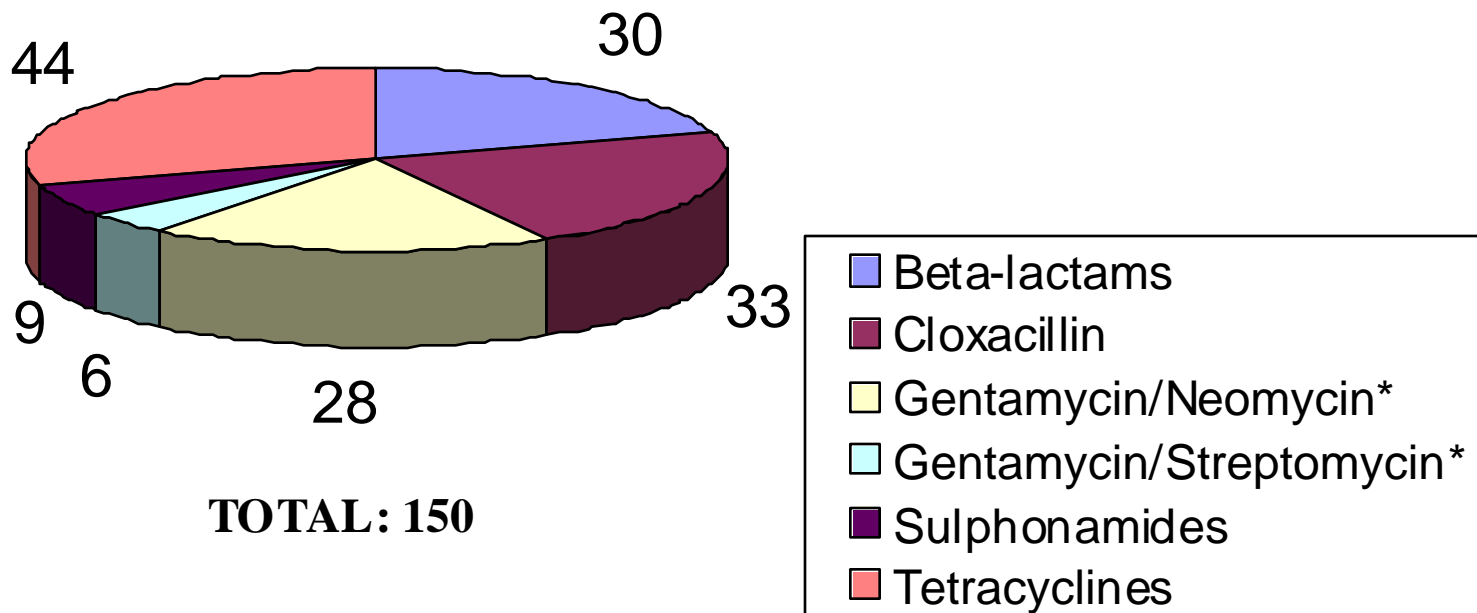
Total Number of Positives

November 1996 - March 31st 2002

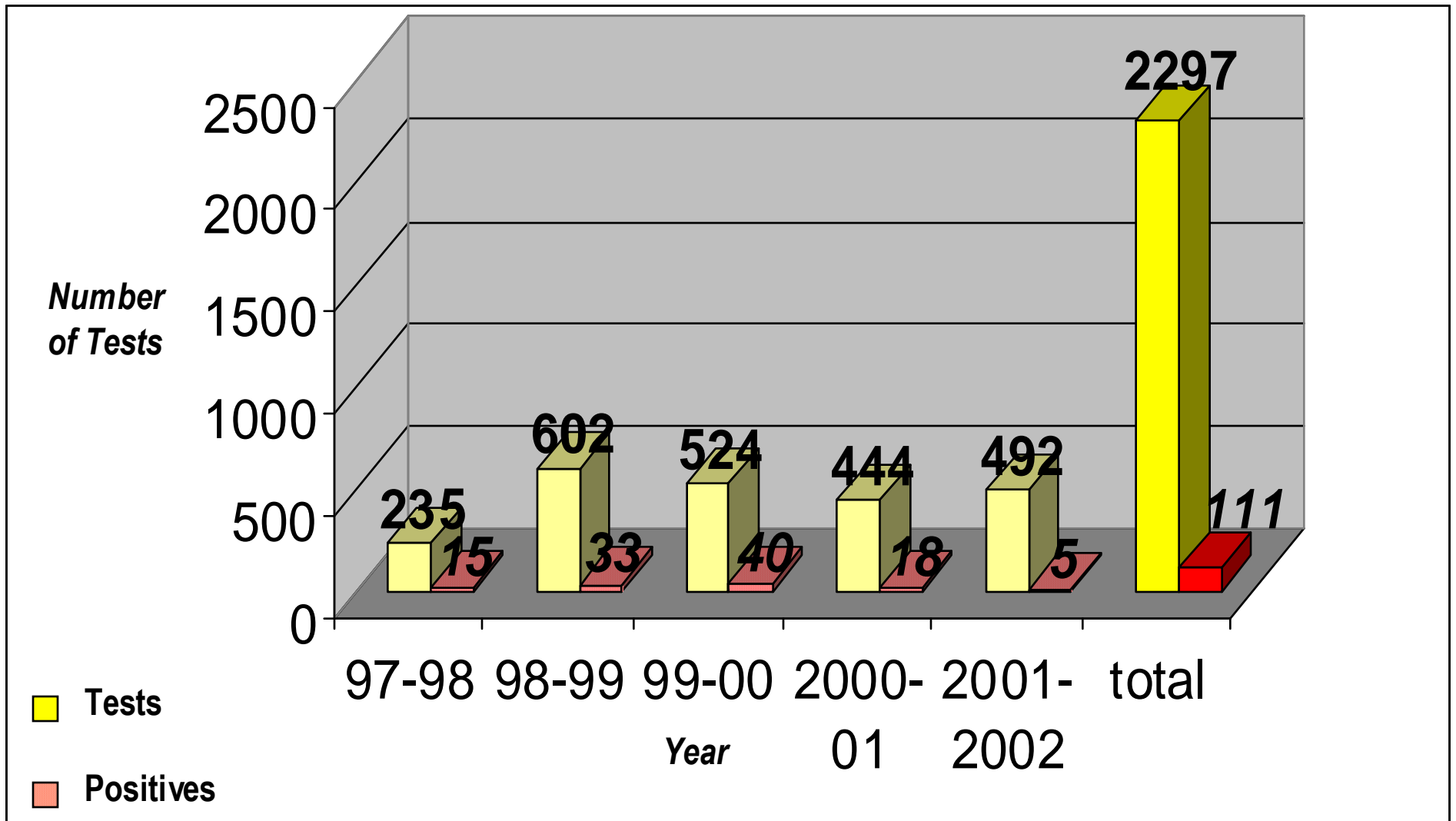
By sample type

	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
TOTAL	7	15	36	49	25	18	150

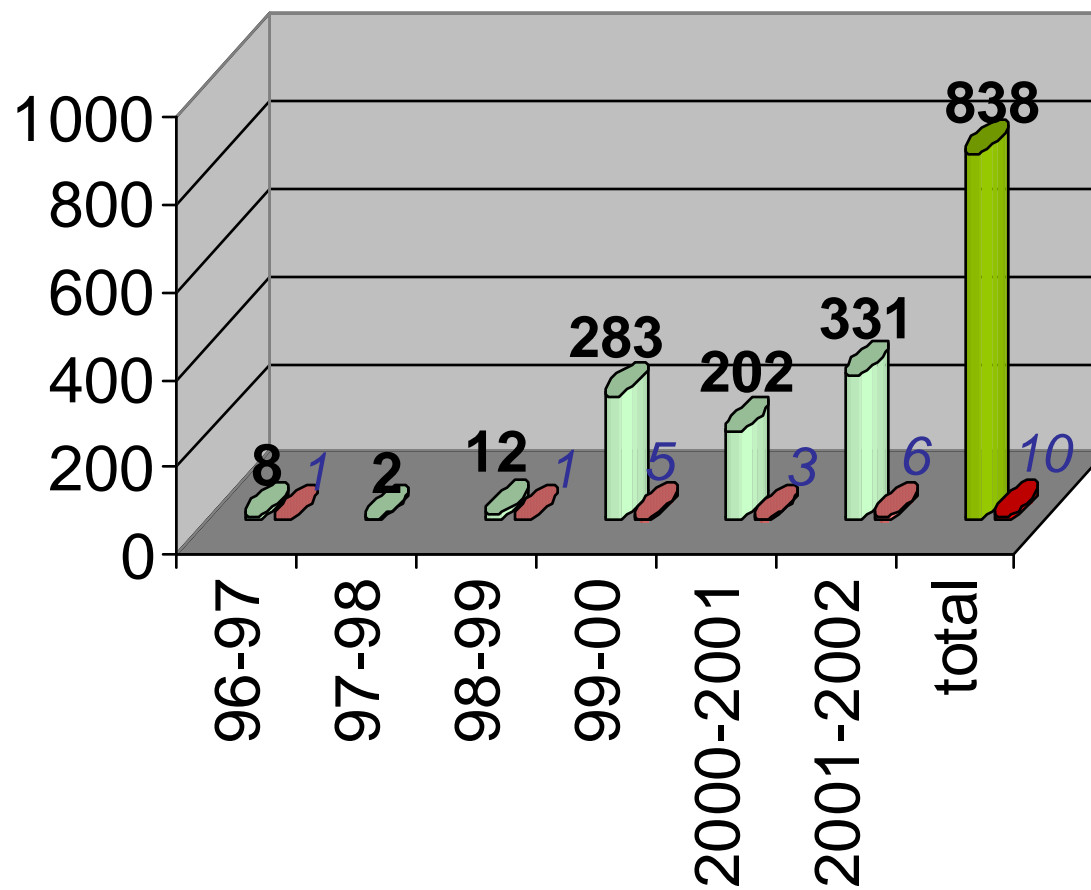
Number of Positives November 1996 - March 31st 2002 By Antibiotic type



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

