

# My Laboratory Career

- To Begin Just A Little Bit About Who I Am
- I was born in Christchurch.
- I had a very happy secure childhood
- I have one sister who I am very close to
- I went to primary school in Lower Hutt and then to Wellington Girls' College
- In my last year of college I was an American Field Scholar in Oklahoma City.
- I started work in 1966
- I passed my final A level year of laboratory Science in 1970 and updated my qualification to graduate from Massey University with a post graduate degree in Medical Laboratory Science in 2001



*— James H. Stevens — N.Y.*



- I have a special partner named Ian and 3 sons and lovely daughter-in-laws
- Daniel is a self employed mechanical engineer who contracts as a project manager
- Ben is Associate Professor of Physics at Victoria University
- Aaron is a Vet and a partner at Central Vet Hospital in Upper Willis Street

I also have two grandchildren,

Ariana who is at Hutt Valley High School and  
Charlie who is at Hutt Intermediate

The next two pictures show our big extended  
family at my 70<sup>th</sup> birthday and at Christmas  
lunch





# Why A Laboratory Job?

Three reasons spring to mind

Nursing meant dealing with throwing up – no way

Middle class girls didn't go to Medical School – marriage and children were waiting

Lab work seemed exciting and challenging – it was all of that

I began my career at The National Health Institute, now The National Communicable Disease Centre

Microbiology was to be my career.

This was before the NZ Certificate of Science was part of the career structure or the degree had even been dreamt about.

My first year of work was spent in a Cross Infection Lab.

Among other things we tested Pies, Hotel Dishwashers, Disinfectants and Operating Theatre Air.

A highlight of this year was testing faecal samples from Piggy Muldoon and his cronies (when they got food poisoning twice from poorly cooked chicken). Apparently they could run really fast when necessary.

From this year I have had a special interest in health and safety.



Did you pick which one was me in my first year of work?

Year 2 was in a General Referral Lab

A highlight? of this year was accidentally injecting myself with Toxoplasmosis while removing peritoneal fluid from mice and a low light was bleeding a rabbit to death from the heart. Only once. I refused to ever do it again

## Year 3 - I saw the light

I went to the Wellington Hospital laboratory for Chemistry and Haematology training

Haematology got the thumbs down but Chemistry was a breeze – I was hooked and my real work journey began.

## **I Became A Chemist**

Year 4 was my O level year. We worked hard, played hard and spent our lunchtimes playing cards (500)

A distinct memory of this year was a house surgeon party where the water pistols were syringes filled with expired human blood. Imagine that today.

Year five was our A level year, similar to the O level year but more involved and we had to train the juniors.

We did Faecal Fat tests using a kitchen blender. The lid came off one morning, the test juice covered the entire steroid lab and shut the room for 3 days. My only reprimand in 5 years came after I put up the quote from Pooh Bear “wherever I go there’s always Pooh, there’s always Pooh and me”. Apparently I was not taking the situation seriously enough.

Lab work is the only job where you “deal with the pooh,” “put it in the fridge” or “stir it up” and get paid for it

Quality was not a priority in the 1960's.

Test result turnaround times were  
“probably today.”

IANZ (International Quality Control  
Testing) regulations had not been  
introduced.

Health and Safety was never considered  
and because of this many of the people I  
trained with have either died or have early  
onset autoimmune diseases.

# The Way It Was 1960's

She is working and he is watching



Mouth pipetting of some samples was never a problem



# Training Today

Today training involves a 4 year degree course at either Auckland, Massey or Otago University

In the first 3 years students sit papers in basic sciences and specialist papers in Anatomy and Physiology, Biochemistry, Haematology, Microbiology, Immunology, Transfusion Medicine, Genetics, Virology and Histology

Today in their fourth year of training

Students do two 3 month sessions in 2 different disciplines in two different laboratories

At the end of this year if they pass their final exams they can be employed full time and after 2 years if they are competent they will be registered to work unsupervised.

# Let's Get Into What Happens In A Medical laboratory Today

- All registered Medical Laboratories in New Zealand have a Haematology, Chemistry and Microbiology department
- Public Hospital Laboratories also have a Transfusion Medicine department (The Blood Bank)
- Bigger Laboratories may also have Histology, Cytology, Virology, Immunology and Genetics Departments

Hutt Hospital Laboratory is on the first floor at  
the right of this picture

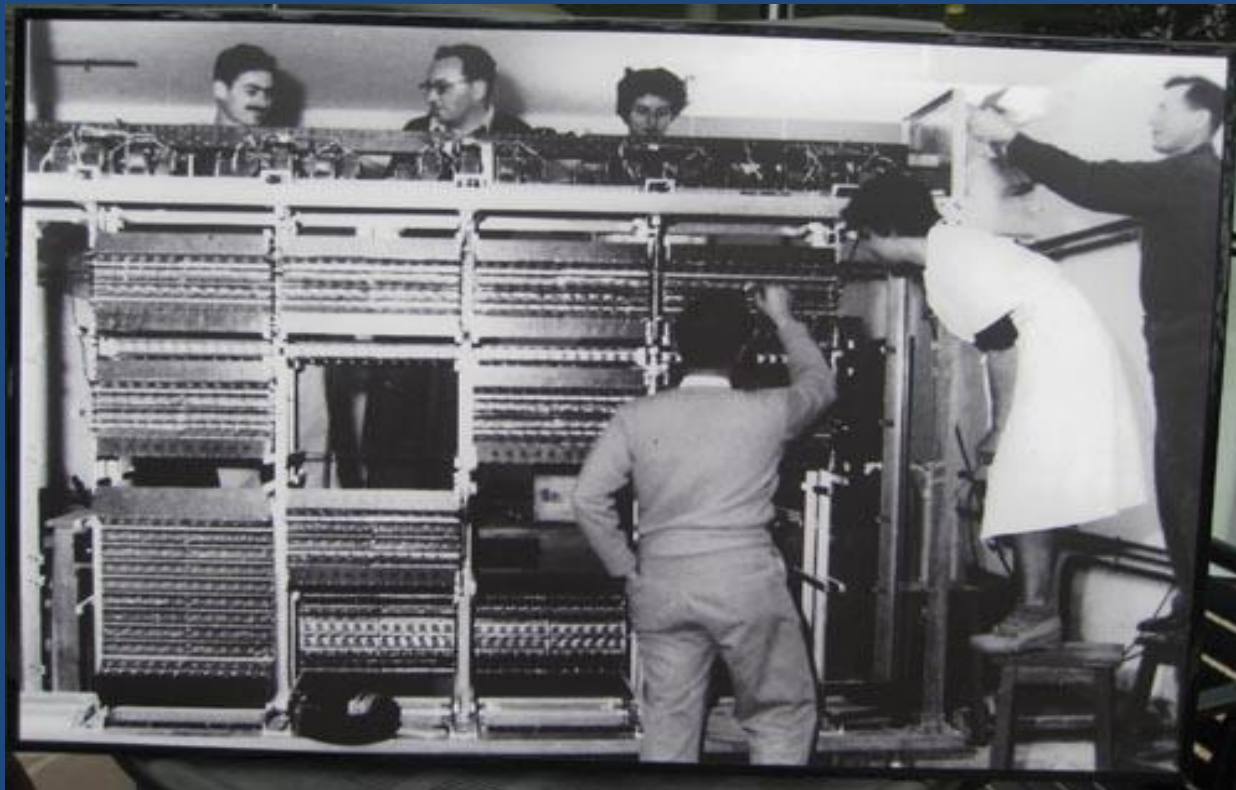


When I started my career all work was done using notebooks and a secretary typed up the results to send to the doctors.

Laboratory computers became part of all lab work in the 1980s

Today apart from your laboratory test request form medical laboratories are paperless. Everything is done by computer

# Early Lab Computer



- You arrive with your test request form
- The Phlebotomist (blood taker alias fleabot) checks your details and enters them into a computer which generates barcoded labels for each of your samples and your form.
- Your samples are collected and labelled
- They go to the laboratory where they are checked and sorted for testing and the form is scanned into the computer.
- The machines read the barcode on the sample, do the tests specific for that sample and send the results back to the computer

The computer sends the results to the requesting doctor

On a good day this all works very well but on a bad day eg. a power cut or blocked line on a machine, the “labbies” more than earn their money trouble shooting and using backup systems

# Examples Of Blood Collection Tubes

The different colours on the lids indicate which tubes are suitable for which tests



# Laboratory Management In The Wellington Area

- In the 1960's the Wellington area had two private and two public hospital laboratories
- The Hutt private lab was owned by Doctors Stuart Alexander and John McCafferty
- Today Southern Community Laboratory has the contract to run all laboratories in the Wellington area

# Laboratory Management Structure

All Medical Laboratory tests in the Wellington area are now done by Southern Community Laboratory

Southern Community Laboratory is owned by a company called Healthscope

Healthscope is listed on the Australian Stock Market

Healthscope has 50 International Pathology Laboratories

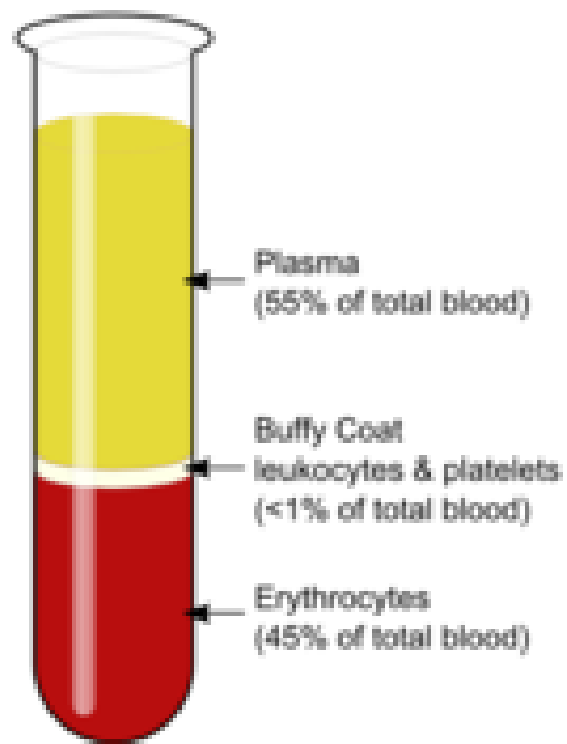
The NZ laboratories are Northland Pathology,  
Gribbles Veterinary Laboratory, Medlab Hamilton,  
Taupo Pathology, Medlab South and two Southern  
Community laboratories –

**Wellington SCL** and Canterbury SCL

(Healthscope also own 46 Private hospitals and 53  
Medical Centres)

# Chemistry Is The Area I Specialised In

- Chemistry mainly studies the chemicals in the part of your blood that the cells float in.
- This can either be the plasma or, if the blood has been clotted, the serum
- The blood is spun in a centrifuge to separate the cells from the fluid to get the plasma or serum
- What is available for use in the body eg Iron and Glucose, and what is on the way out eg Urea and Bilirubin, can then be measured.



# In the Chemistry Lab at Hutt Hospital



- The next two pictures show
- 1: an old analyser that I used when I first did Chemistry Liver Function and Cholesterol tests. The machine did 24 tests of one type, eg Bilirubin, and then it had to be restarted to do the next 24. A Liver Function profile took all afternoon for 24 patients.
- Today the analysers do all tests for several hundred patients per hour.
- 2: a Sodium and Potassium analyser which was unreliable and caused me grief in the middle of the night on a number of occasions



11.69 x 8.26 in



# The Roche Cobas Analyser At Hutt Hospital

It can do several hundred tests per hour  
In the Wellington Laboratory they have several of  
these linked in tandem



# How the units are linked in tandem

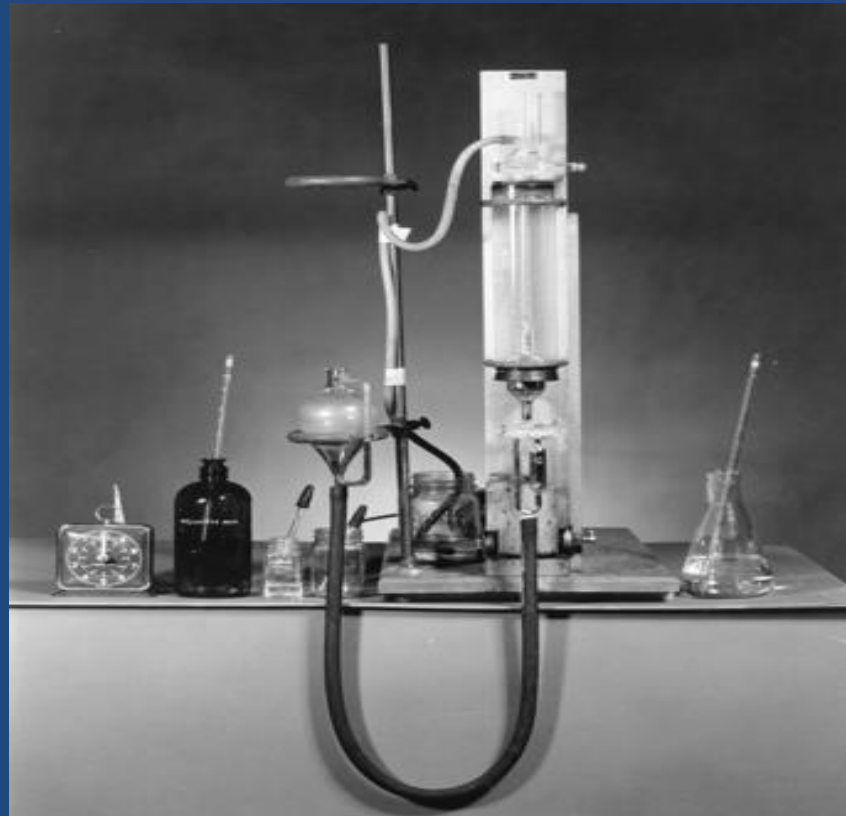


The black and white lidded bottles contain enough chemical to do 100 tests, the two dropper bottles contain standard solutions and the three little bottles contain samples of known value to act as controls



# Van Slyk Blood Gas Analyser

This analysed bicarbonate and has a cup of exposed Mercury at the end of the rubber tubing



Today the Blood Gas Analyser does Oxygen, CO<sub>2</sub>, pH, Sodium, Potassium Haemoglobin and other tests all at once in less than one minute



# Just For Your Interest

- An average adult male has about 5 litres of blood (8 pints)
- An average adult female has about 4.7 litres
- Loss of 40% without treatment will cause death ie. if you lose more than 2 litres you are in big trouble
- Loss of up to 750 mls (3/4 of a litre) can normally be tolerated

# What each Laboratory Department Studies

- Haematology – the cells in your blood
- Chemistry – the fluid the cells float in
- Blood Bank – the blood you get if you need it
- Histology – your abnormal lumps and bumps
- Cytology – your abnormal cells
- Immunology and Virology – name says it all
- Genetics – study of your DNA

- During my Lab career I made it my mantra to
- Talk to at least 5 different people about something non work related
- Learn at least one new thing
- Have at least one good laugh
- I hope you have all achieved at least two of those today
- I also hope all of this has made some sense and been helpful for you

# Finally

