

The Golden Mortar



Newsletter of the Southern Gauteng Branch of the Pharmaceutical Society of South Africa and Associated Sectors

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How are our COVID-19 Vaccines made? *by Lee Baker*

All vaccines work by exposing the body to molecules from the target pathogen to trigger an immune response – but the method of exposure varies.

The very first vaccine, the smallpox vaccine, used an animal virus to prevent a human infection. This was possible because the two viruses were so similar. The next vaccines were made using micro-organisms that were inactivated/killed. Vaccines made from live/weakened micro-organisms, such as the measles vaccine, followed next. Research then showed that it wasn't always necessary to use the whole micro-organism. In some instances, specific parts of the virus or bacteria which the immune system will recognise and to which it mounts a response, can be extracted and put into a vaccine. Pertussis vaccines are made this way. Recombinant technology, where some genetic material is removed from a micro-organism, and placed in another cell, enabling the cell to now make parts of the micro-organism was the next innovative technology developed in the 1980s. This is how hepatitis B vaccines are made, for example. The gene coding for hepatitis B surface antigen is placed into the genetic material of a yeast cell and the yeast cell produces large quantities of hepatitis B surface antigen!

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As we face the current global pandemic, the focus is once again on vaccines, and there are more than 180 research institutes and 100 companies worldwide involved in SARS CoV-2 vaccine development. Not only are the original strategies of making vaccines being used, but exciting new technologies have also been employed. This article will address the SARS CoV-2 vaccines likely to become available in South Africa and that are made using these new technologies.

Next Generation Vaccines

The spike protein on the surface of the SARS-CoV-2 virus has been identified as the immunodominant antigen of the virus, and because of this, most vaccines have focused on producing antibodies to this spike protein. These new vaccines don't contain viral proteins, as in the past, but use gene-based technology that provides instructions to the recipient's own cells on how to make the spike protein which, in turn, will stimulate the immune system to recognise and respond to it.

1. Viral Vector Vaccine

The gene that codes for the spike protein is extracted from the SARS-CoV-2 virus and placed in a modified adenovirus, which is a harmless virus that doesn't replicate or cause illness. This is similar to the recombinant

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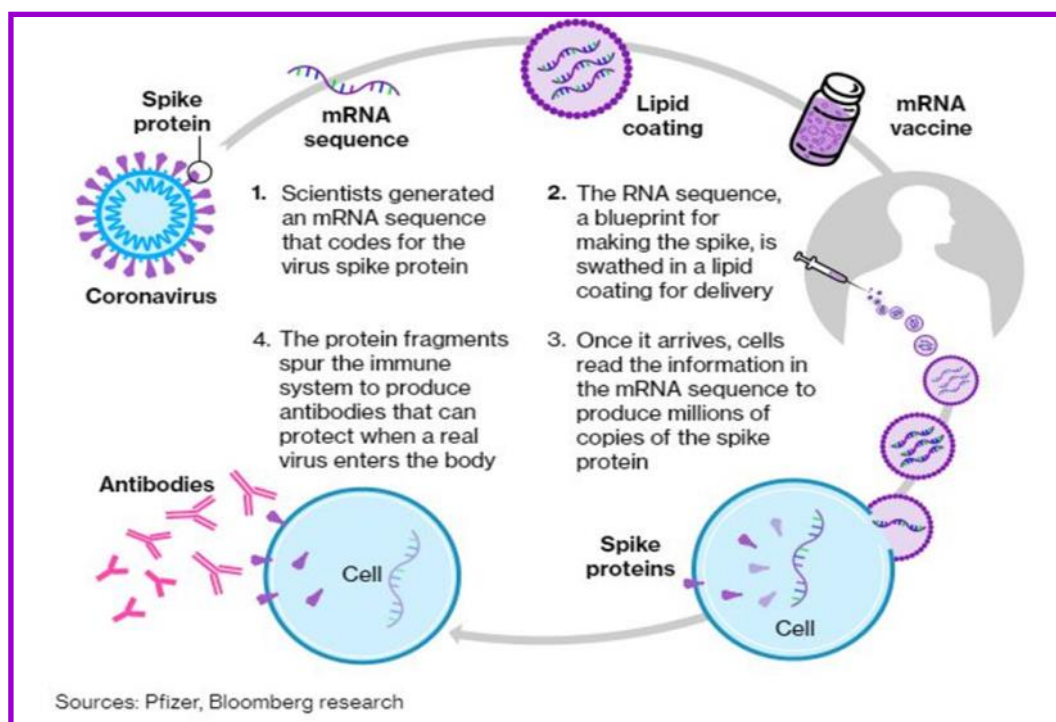


technology used to make the hepatitis B vaccines, but now the adenovirus containing the genetic material for the SARS-CoV-2 spike protein is put in the vaccine. The adenovirus then acts as a vehicle to deliver the genetic code (DNA) for producing the spike protein into human cells. The DNA for the spike protein is then converted to mRNA in the cell which instructs the cell to make large amounts of the spike protein, some of which migrate to the surface of the cell which then triggers an immune response. The immune system recognises this protein as foreign and mounts an immune response. This mimics what happens during natural infection with certain pathogens - especially viruses, but now only the spike protein is produced and not more viruses.

The Astra Zeneca vaccine, Covishield, and the Johnson and Johnson vaccine, Janssen Covid-19, are made using this technique.

2. mRNA Vaccines

To produce the mRNA vaccines, scientists produce a synthetic version of the mRNA that the virus uses to build its spike proteins. The mRNA is encapsulated into lipid nanoparticles which enables it to enter into the recipient's cells without being degraded. This mRNA in the recipient's cells instructs the cell to produce the virus' spike protein, as with the viral vector vaccines. Because of the mRNA's transitory nature, there is zero risk of it integrating with the recipient's own genetic material.



The Pfizer/BioNTech vaccine, Comirnaty, is made using this technology. Although the techniques for making these vaccines seem to be new to most people, research has been on-going for many years, and in some cases for decades, but the focus was previously on cancer treatments. These vaccines are much simpler to make and can be more rapidly produced than conventional vaccines. In addition, they can be easily adapted to address the variants that arise from mutations of the virus.

At this point we do not know what other COVID-19 vaccines will become available in South Africa.

References:

1. Desmond A, Offit PA. On the shoulders of Giants - from Jenner's cowpox to mRNA Covid vaccines. NEJM 2021;384(12):1081-1083
2. Nucleic acids. <https://www.khanacademy.org/science/ap-biology/gene-expression-and-regulation/dna-and-rna-structure/a/nucleic-acids>
3. The different types of COVID-19 vaccines. WHO. <https://www.who.int/news-room/feature-stories/detail/the-race-for-a-covid-19-vaccine-explained>.
4. What are viral vector-based vaccines and how could they be used against COVID-19? GAVI. <https://www.gavi.org/vaccine/what-are-viral-vector-based-vaccines-and-how-could-they-be-used-against-covid-19> | Gavi, the Vaccine Alliance-
5. Desmond A, Offit PA. On the shoulders of giants - from Jenner's cowpox to mRNA vaccines. N.Engl J Med 2021;384(12):1081-1083
6. COVID-19 vaccines - are we there yet? Australian Prescriber. 17 Dec 2020. Available from nps.org.au/ Australian-prescriber





TRIBUTES TO RAYMOND POGIR

I worked in the room next to Ray and his beloved museum for seven years and was privileged to get to know him as an amazing person. Every day started on a high note when I saw Ray and asked: "How are you today Ray?", he would answer "Fantastic!"

I served on a number of committees with Ray including the Golden Mortar publication Committee, and was always astounded by his remarkable wealth and depth of knowledge in both pharmacy and business matters. His sixty-six years as a pharmacist gave him incredible insights into the profession and made him undoubtably one of the leading pharmacists of our profession.

He was extremely hard working, making a positive contribution to all the committees that he served on and to every activity and initiative with which he became involved. He was always at the forefront of fostering professional development, giving encouragement to fellow pharmacists and particularly young pharmacists to whom he was a superb mentor.

He was a great friend and had a wonderful sense of humour, he was enthusiastic, pragmatic and a great inspiration to all that knew him.

Rest in peace dear Ray, although you are no longer with us may your great legacy live on.

Miranda Viljoen FPS

On behalf of Amayeza Info Services, I send heartfelt sympathy to Ray's family. We have all lost a gentle giant in our lives. I had the honour of being involved with him in one way or another for the past 36 years and he was one of our staunchest supporters of medicine information. Ray was a true gentleman who was dedicated to his profession to the very end. He will be sadly missed.

Regards
Lee Baker

National Pharmacy Museum Artefacts



To start your very own collection, Please contact Virginia at 011 442 3615 / virginia@pssasg.co.za



SAVE THE DATE: IT'S ALL SYSTEMS GO FOR SARCD A CHRISTMAS 2021: 17 – 20 AUGUST 2021

We are delighted to inform you that SARCD A Christmas 2021 has received the green light from Johannesburg's Joint Operations Committee, which is tasked with ensuring that all events held in Johannesburg are safe. The exhibition will take place at Gallagher Convention Centre from Tuesday, 17 – Friday, 20 August from 08:00 – 18:00 each day.

Under current Covid regulations we are allowed to accommodate 250 buyers indoors at any given time, and we are introducing a **time slot booking system** to facilitate this. We are hopeful that by August the number of buyers allowed will increase and that we will be able to adjust our booking system accordingly.

Buyers will be able to book a **three-hour time slot** to visit the exhibition and health regulations will be strictly enforced. This includes the wearing of masks, temperature screening, social distancing and sanitising of hands and surfaces; and a Covid officer onsite to ensure that we comply with all the rules. While we appreciate that the introduction of time slots to visit the exhibition poses a degree of inconvenience, SARCD A is committed to doing everything in its power to keep buyers, exhibitors, staff and contractors safe.

We will communicate details of the time slot booking system and other relevant information in due course, but wanted to share this exciting news with you as soon as possible. **The SARCD A team is looking forward to welcoming you to SARCD A Christmas 2021...it's been far too long!**





SAACP (SG)

South African Association of Community Pharmacists (Southern Gauteng Branch)

Visit our website: www.saacpsg.co.za

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View The Golden Mortar editions on our website.

Contact us at:

info@saacpsg.co.za

SAACP SG is a financial contributor to The Golden Mortar.



The PSSA Book Department

Do you know that the Book Department has a range of essential publications for pharmacists at preferential prices for members of the PSSA?

From overseas publications such as Martindale, Merck Manual and Dorland's Illustrated Medical Dictionary to local publications such as the Daily Drug Use, South African Medicines Formulary (SAMF) and the Scheduled Substance Register.

Ordering is as simple as 1, 2, 3.

1. Go to the PSSA website, www.pssa.org.za click on Membership and then Member Services.
2. Complete the order form and submit it.
3. Make payment via EFT.

Or contact Dinette at PSSA National Office on (012) 470-9559 or at dinette@pharmail.co.za



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Sithandekile Ncube

LETTER OF APPRECIATION

To: Pharmaceutical Society of South Africa Southern Gauteng Branch.

My name is Sithandekile Ncube and I'm a pharmacist intern. I recently graduated from Wits University. It's really a great honour and pleasure to have been awarded the Denis Jabulani Khoza Community Service Award. I want to extend my gratitude to the PSSA Southern Gauteng Branch for giving me this award. Community service is my passion and I look forward to continuing doing it and encouraging others to take it up in order to make a difference and help our communities become better. I really want to commend PSSA for recognising the efforts and potential of the members of the pharmacy community. My message to all the members of the pharmacy

community is, **"Show kindness, be good to others, be a helping hand and continue ensuring patient well-being."**

Yours sincerely
Sithandekile Ncube

REPORT ON SAACP SG CPD:

THE IMPORTANCE OF SELENIUM



by Gary Kohn



Howard Armistead

Listening to the presentation by Howard Armistead on the use of Selenium it became apparent that the sale of Selenium supplements in our practice situations can benefit our patients.

Selenium is an essential trace element that is present in every cell in our bodies in the form of glutathione peroxidase as the universal antioxidant that keeps each cell healthy.

Selenium is available in trace amounts in the food that we eat.

Medical journals have proven in studies that Selenium 200mcg can slow certain viral diseases' progression, like HIV by 43.8%, and that high-dose Selenium can significantly reduce mortality rates in highly deadly viral diseases like Ebola and Hantan.

Selenium expert scientists report that "... this mineral can work as prophylaxis against viruses, reducing their virulence."

Selenium, as a Kf-kB inhibitor is anti-inflammatory, antiviral, anticoagulant, maintaining vascular integrity; it helps to prevent heart attack, stroke, and pneumonia, and maintains the antioxidant balance in the body, improving red blood cell count, and replaces Selenium loss due to viral replication, specially in the liver, kidneys and heart, and increases CD4 cell count.

Also called NF-Kb and Nuclear Factor-kappaB, a group of proteins that help control many functions in a cell, including cell growth and survival. These proteins also control the body's immune and inflammatory responses. NF-kappaB may be overactive or found in higher than normal amounts in some types of cancer cells. This may lead to cancer cell growth. High levels of overactivity of NF-kappaB may also lead to inflammatory disorders, such as asthma and ulcerative colitis, and autoimmune disorders, such as rheumatoid arthritis.

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NF-Kb (nuclear factor kappa-light-chain-enhancer of activated B cells) is a protein complex that controls transcription of DNA, cytokine production and cell survival. ...NF-Kb plays a key role in regulating the immune response to infection.

<http://en.m.wikipedia.org> > wiki

The following three medicines have proven to be effective against Covid-19:

The strongest NF-kB inhibitors are corticosteroids like dexamethasone, prednisone, methyl cortisone, and hydrocortisone; Corticosteroids and anticoagulants are on the WHO "Standard of Care" list for Covid-19.

Monoclonal antibodies have to be administered as an IV, and are found to be not that effective.

Other mild NF-kB inhibitors available in pharmacies are aspirin, Selenium, indomethacin and ibuprofen.

Anticoagulants are low-dose heparin, enoxaparin, and aspirin.

Selenium is clearly not a cure for Covid-19 which is caused by SARS-COV-2, which is part of the corona virus family, and cannot replace any pharmaceutical medicine therapy, but can however be added to the drug therapy to improve overall treatment.

SARS-COV-2 binds with the ACE2 receptor that is found on many organ types and in the brain.


Viruses are produced inside the cells; they seize or 'hack' the cell's protein production machinery inside the nucleus, inserting their own viral code inside the cell's DNA 'computer' that controls protein production. Viral components that are in the nucleus are assembled in the cytoplasm, and after multiples of viruses are produced the cell bursts, releasing viruses to infect other cells.

If one can inhibit NF-kappa b, this can in turn inhibit and reduce inflammation and viral replication, and if it can reduce viral replication, it can slow down disease progression.

Laurent Heffler, in an independent study, reports that it is well documented that Selenium deficiency promotes mutation, replication, and increased virulence in RNA viruses. Low Selenium status is a common finding in conditions considered at risk in severe Covid-19, specially in the elderly. Selenium has been overlooked but may have a significant place in Covid-19 spectrum management.

It might be essential to maintain optimum Selenium status, specially in the elderly.


References and access to articles and papers on SERC and SAM Nutritional Products are available on the link to our SAACP SG Facebook website.



Professional Indemnity Insurance

You should be aware that pharmacists in all spheres of Practice require Personal Indemnity Insurance. Not to have it is simply not an option – it is a requirement of the South African Pharmacy Council.

PSSA offers its members access to the essential cover at very competitive rates through the Professional Provident Society.



For further details please contact Nikita at the PSSA National Office on (012) 470-9557 or at Nikita@pharmail.co.za

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Wits Pharmacy
Student Council

CONTACT DETAILS

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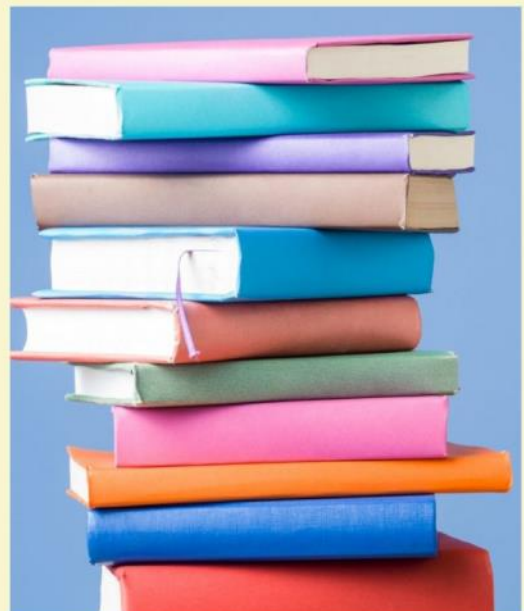
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TEXTBOOK DRIVE

WPSC IS COLLECTING
PRELOVED TEXTBOOKS TO
HELP PHARMACY
STUDENTS IN NEED



#DONATE_A_BOOK_SAVE_A_DEGREE





WITS PHARMACY STUDENTS' COUNCIL TEXTBOOK DRIVE

The Wits Pharmacy Students' Council (WPSC 2020/21) has identified that students struggle to purchase prescribed textbooks and therefore have to borrow books from the library every other day to try and catch up on course content. This can be really frustrating especially during the pandemic where lectures are conducted remotely and students are not afforded the opportunity to access campus on a daily basis to return the books as frequently as the library requires them to. In order to help our students, WPSC has decided to collect pre-owned textbooks and loan them to students for the duration of the academic year. These books will be brought back to the WPSC offices at the end of the year to be loaned to another student the following year.

We are kindly asking for donations of the following textbooks (*earlier editions are also acceptable*);

1. **Human Biology: Concepts and Current Issues**, 8th edition Johnson Michael D.
2. **The Central Science**. 14th edition (8th to 13th is also fine). Brown T.L., Le-May H.E Jr, B.E Bursten. Prentice Hall. Pearson Education.
3. **Pharmaceutical Practice**. 4th edition. Winfield, J.A. Rees and Churchill Livingstone.
4. **Pharmaceutical Calculations**. 14th edition, 2012, H.C. Ansel, Lippincott & Wilkins
5. **Calculations for Pharmaceutical Practice**. 4th edition. A.J. Winfield & I.O Edafiogho
6. **Fundamentals of Pharmacognosy and Phytotherapy**. 2nd edition, 2012). Heinrich, M., Barnes, J., Gibbons, S. and Williamson, E.M. Churchill Livingstone; London.
7. **Physics 6th edition**. Giancoli, D.C. Prentice Hall-Pearson Education.
8. **Fundamentals of human physiology**- Lauralee Sherwood
9. **Medical Biochemistry**- John W Baynes, Marek H. Dominiczak

Your support would be highly appreciated.

If you need to find out more about our drive please use the following details to contact us: **0649514236** for calls or WhatsApp messaging or alternatively you may email witspharmcouncil.academics@gmail.com.

Best regards

Your custodians of medicine

Esther Shuping

Academic Officer of WPSC 2020/21



IMPORTANT: INFORMATION WEBSITE FOR MEDICINES - CURRENT AVAILABILITY OR OTHERWISE, NEW AND DISCONTINUED PRODUCTS, ETC.

The website was first launched in 2011 as "Medical News & Events", which had over 600,000 pageviews. In 2019 we decided that a new "face" was required and we updated the website to [PharmaNews](https://pharmanews.co.za/), click on the link to view.

Our mission is to supply information that is fast, reliable, and accurate, regarding Scheduled products that directly impact on the medical and pharmaceutical professions, using push notifications..

A Healthcare Professional (Pharmacist, Pharmacist Intern, Community Service Pharmacist, Pharmacist Assistant, Doctor, Intern, and Nurse) will be able to check on New Products as they are launched, the availability, should there be a supply problem, and the withdrawal of a drug for whatever reason. This is of particular interest to pharmacists in the Community Pharmacy Sector, and Locum pharmacists. We have seen an increase in readership since Covid restrictions on Company Representative visits.


In order to comply with the National Code of Marketing, the website is secure and the Healthcare Professional needs to register with their respective "P" Numbers. This prevents the consumer from seeing sensitive information. (The number you use is, e.g. "11585", without the "P". I cannot see your password, in terms of the POPI Act and you can generate a new one if so desired).

The log-in link is https://pharmanews.co.za/wp-login.php/?redirect_to=https://pharmanews.co.za/ and for those colleagues that want to register the link is : <https://pharmanews.co.za/register/>.

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Donald Black, the Operations Director of the Pharmanews Website, is a retired Community Pharmacist, having qualified in 1982 from the then P.E. Technikon, now part of NMMU. He has worked in the Community Sector for all my career, first as an employee in Port Elizabeth and Hermanus before joining Dis-Chem in 2003. He retired in 2018, due to ill health and now focuses his attention on the website.

He has been involved in Pharmacy politics since 1986 when he was introduced to the Society by the late Mr "Spike" Michael Rubin. He first served as a Committee Member of the Cape Midlands Branch before becoming Secretary, a position he held until 2001, when he transferred his membership to the Cape Western Province Branch. He has been Chairman of the Branch and the SAACP Sector and continues to serve as a Committee Member.



SAAPI Online Workshops - What's Coming Up?

"QMS ELEMENTS"

SESSION 1 : 08 June 2021 (08:30am - 1pm)
SESSION 2: 24 June 2021 (08:30am - 1pm)
SESSION 3: 29 July 2021 (08:30am - 1pm)
Venue: Microsoft Teams
Presented by: Rosemary Kietzmann

"INTRODUCTION TO PHARMACOVIGILANCE"

DAY 1 : 30 June 2021 (9am - 1pm)
DAY 2: 01 July 2021 (9am - 1pm)
Venue: Microsoft Teams
Presented by: Cathy Jasson

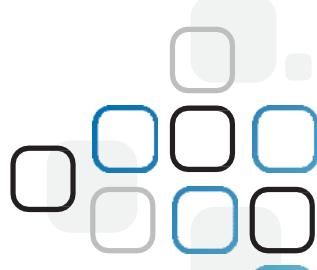
"SAHPRA INSPECTION READINESS"

DAY 1 : 13 July 2021 (08:30am – 12:30pm)
DAY 2: 14 July 2021 (2pm – 4:30pm)
Venue: Microsoft Teams
Presented by: Rosemary Kietzmann

"INTRODUCTION TO PHARMACEUTICAL DEVELOPMENT"

DAY 1 : 07 July 2021 (9am - 1pm)
DAY 2: 08 July 2021 (9am - 1pm)
Venue: Microsoft Teams
Presented by: Mbonisi Ncube

Please visit www.saapi.org.za to register or contact Alison at alison@saapi.org.za for more information.







The Chairman of the Editorial Board is David Sieff and the members are Tabassum Chicktay, Stephanie De Rapper, Gary Kohn, Tammy Maitland-Stuart, and Cecile Ramonyane, - Branch Secretary. All articles and information contained in The Golden Mortar of whatsoever nature do not necessarily reflect the views or imply endorsement of the Editorial Board, the Branch Committee, the PSSA, its' Branches or Sectors. The Editorial Board and the aforesaid cannot therefore be held liable. Every effort is made to ensure accurate reproduction and The Golden Mortar is not responsible for any errors, omissions or inaccuracies which may occur in the production process.

The Editor reserves the right to amend punctuation or text for correctness, and to summarise where necessary.

We welcome all contributions and as space permits, these will be published.

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Academic Pharmacy:	Zelna Booth & Muhammed Vally

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The Editorial Board acknowledges, with thanks, the contributions made by the SA Association of Community Pharmacists (SAACP) Southern Gauteng Branch, to the production of this newsletter

