

The Synergistic Mechanisms Leading to Accelerated Cancer Progression

Sars-CoV-2 & Spike protein can cause Lymphocytopenia and shows cancer causing potential.



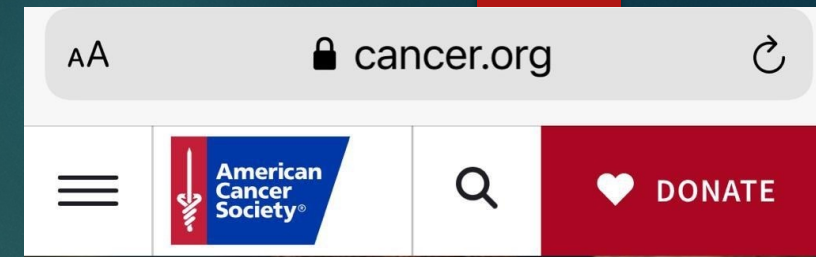
JOACHIM GERLACH
HEAD OF R&D VEDICINALS INDIA

Co-Founder of the Long Covid Coalition

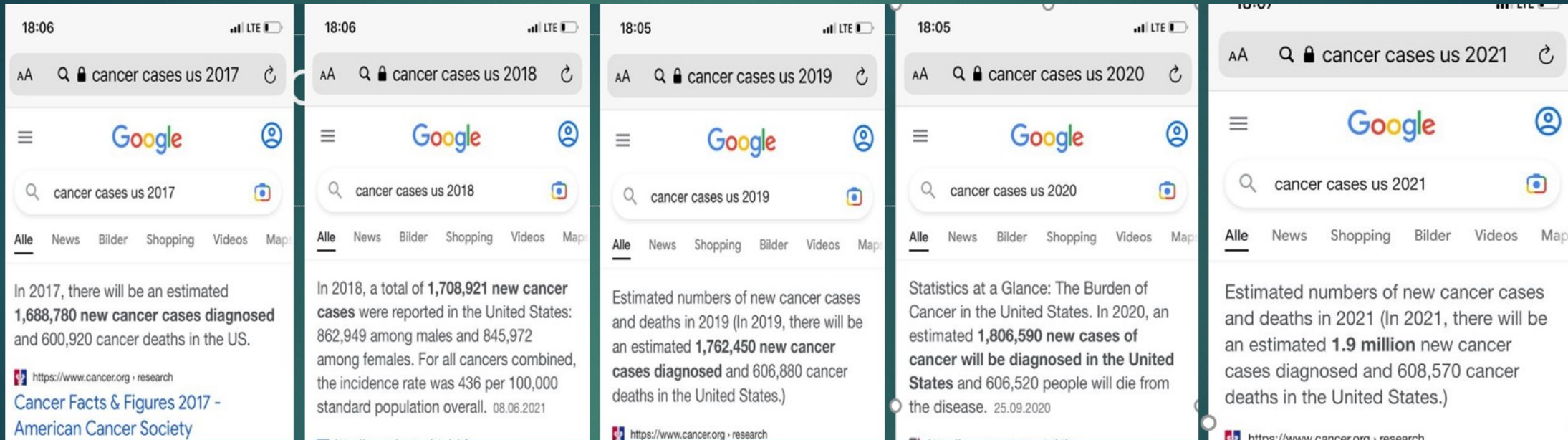
Outline of today's talk

- ▶ PART 1 - Causes of Lymphocytopenia
- ▶ PART 2 - Cancer causing potential of Sars-CoV-2 and /or Spike proteins
- ▶ PART 3 - Preventive Interventions with Phenolic Compounds and Dietary Supplements

Cancer rates per year in US



Average for the years 2017-2020 is 1,74 Mio cancer cases per year in the US



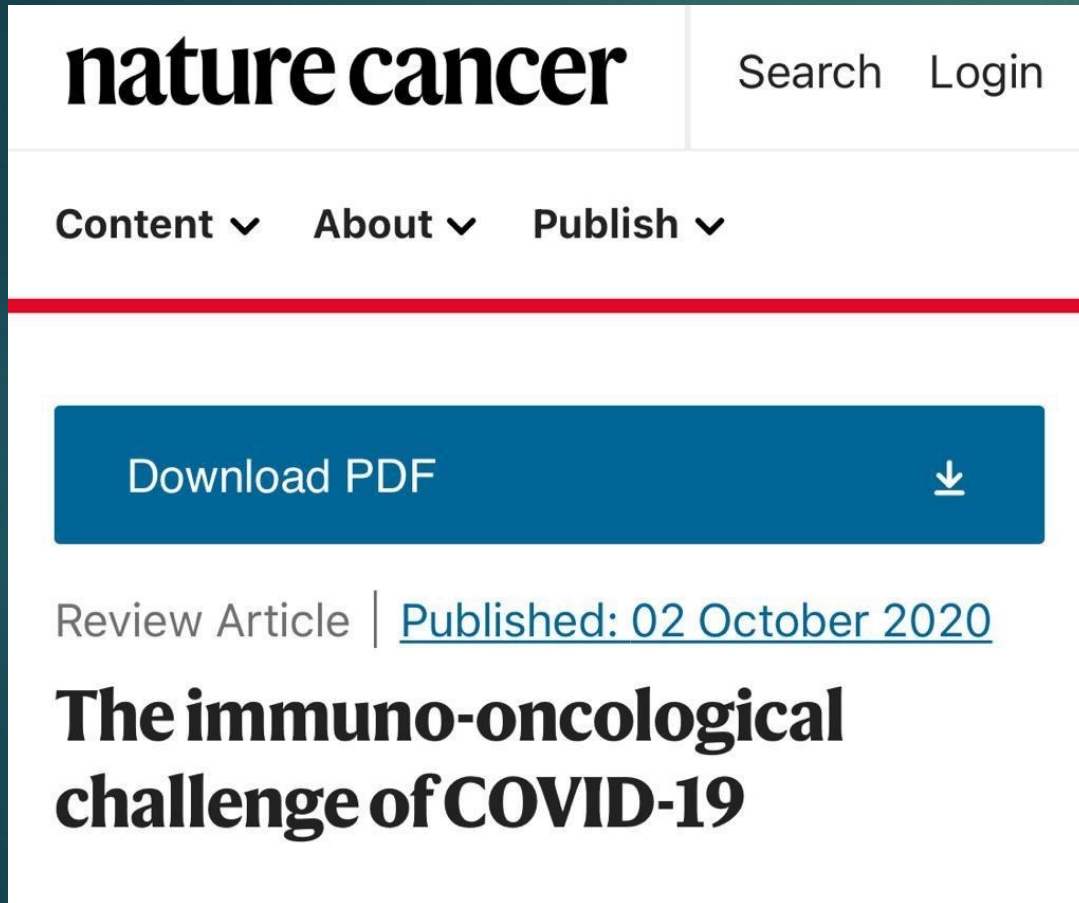
1,74 to 1,90 Mio is 160.000 cases above the average



PART 1

Causes of Lymphocytopenia

Started in the early 2020



The screenshot shows the top section of the Nature Cancer website. At the top left is the 'nature cancer' logo. To its right are links for 'Search' and 'Login'. Below these are navigation links: 'Content', 'About', and 'Publish', each followed by a downward arrow. A red horizontal line separates the navigation from the main content area. In the main content area, there is a blue button labeled 'Download PDF' with a download icon. Below the button, it says 'Review Article | Published: 02 October 2020'. The main title of the article is 'The immuno-oncological challenge of COVID-19'.

nature cancer Search Login

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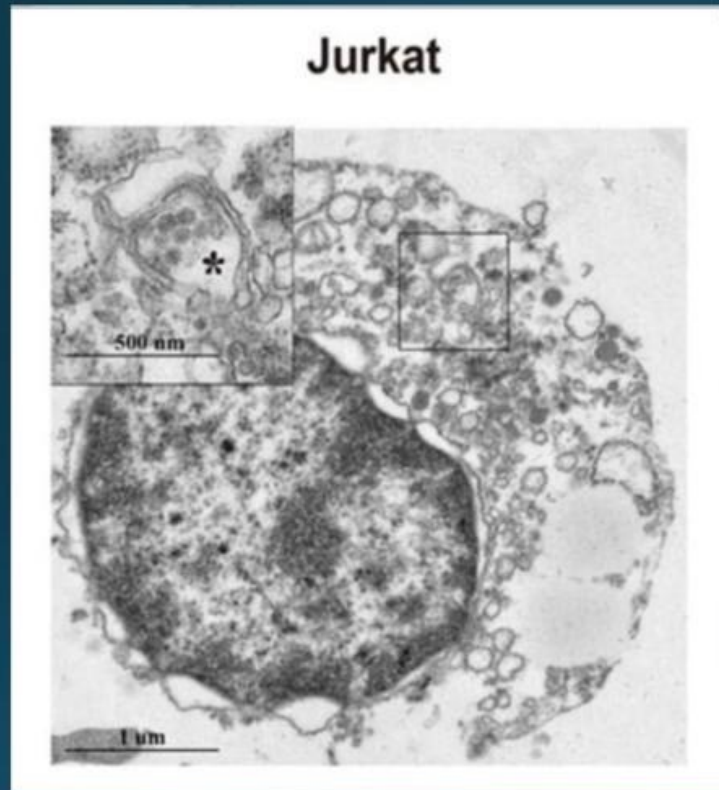
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Review Article | [Published: 02 October 2020](#)

The immuno-oncological challenge of COVID-19

- ▶ Severe COVID-19 is linked to an inflammatory burst and lymphopenia, which may aggravate cancer prognosis.

1: Direct Infection of T-Lymphocytes by Sars-CoV-2



Signal Transduction
and Targeted Therapy

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Article | [Open Access](#) |
Published: 11 March 2022

**ACE2-independent infection of
T lymphocytes by SARS-CoV-2**

[Xu-Rui Shen](#), [Rong Geng](#), ... [Peng Zhou](#) ✉

+ Show authors

This will result in
IMMUNODEFICIENCY!

**WHAT DOES IT MEAN
FOR LONG HAULERS
WHO ARE IMMUNO
COMPROMISED?**

AA nature.com

Cell Death & Differentiation Search Login

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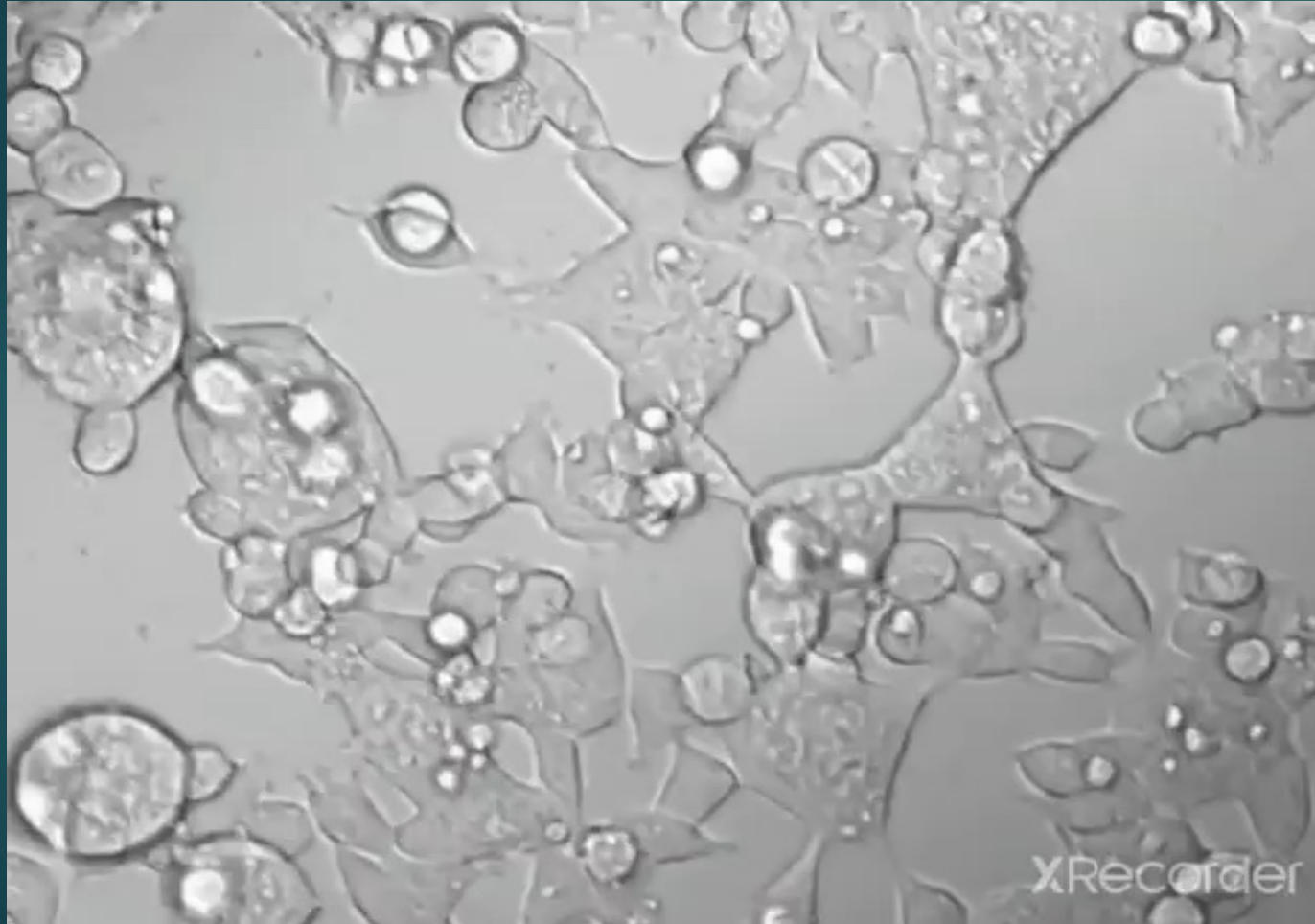
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Article | [Published: 20 April 2021](#)

SARS-CoV-2 spike protein dictates syncytium-mediated lymphocyte elimination

- Infection, as the expression of the SARS-CoV-2 spike glycoprotein is sufficient to induce a rapid (~45.1 nm/s) membrane fusion to produce syncytium, which could readily internalize multiple lines of lymphocytes to form typical cell-in-cell structures, remarkably leading to the death of internalized cells.

2. Sars-Cov-2 causes Syncytia formation



Cell membranes are fusing together and leave large cluster of damaged cells!

3. Suppression of Interferon-I signalling

Cell Reports

Volume 33, Issue 1, 6 October 2020, 108234

Article

Evasion of Type I Interferon by SARS-CoV-2

Hongjie Xia^{1, 9} ... Pei-Yong Shi^{1, 5, 6, 7, 8}

- ▶ SARS-CoV-2 proteins antagonize IFN-I production and signaling
- ▶ Different SARS-CoV-2 proteins inhibit IFN-I response through distinct mechanisms
- ▶ SARS-CoV, SARS-CoV-2, and MERS-CoV proteins inhibit IFN-I at different efficacies

<https://www.sciencedirect.com/science/article/pii/S2211124720312237>

3. Suppression of Interferon-I signalling: CONTINUED

natureimmunology Search Login

Content ▾ About ▾ Publish ▾

[Published: 12 June 2005](#)

A critical function for type I interferons in cancer immunoediting

[Gavin P Dunn](#), [Allen T Bruce](#), ... [Robert D Schreiber](#) 

+ Show authors

- ▶ Although interferon- γ (IFN- γ) is known to be involved in this process, the involvement of type I interferons (IFN- α/β) has not been elucidated.
- ▶ We now show that, like IFN- γ , endogenously produced IFN- α/β was required for the prevention of the growth of primary carcinogen-induced and transplantable tumors.

4. Depletion of NK-cells

nature reviews immunology Search Login

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Perspective | [Published: 26 November 2021](#)

Immune dysregulation and immunopathology induced by SARS-CoV-2 and related coronaviruses – are we our own worst enemy?

- ▶ In addition, these changes in monocyte maturation are accompanied by depletion of natural killer cells, CD4+ T cells and B cells.



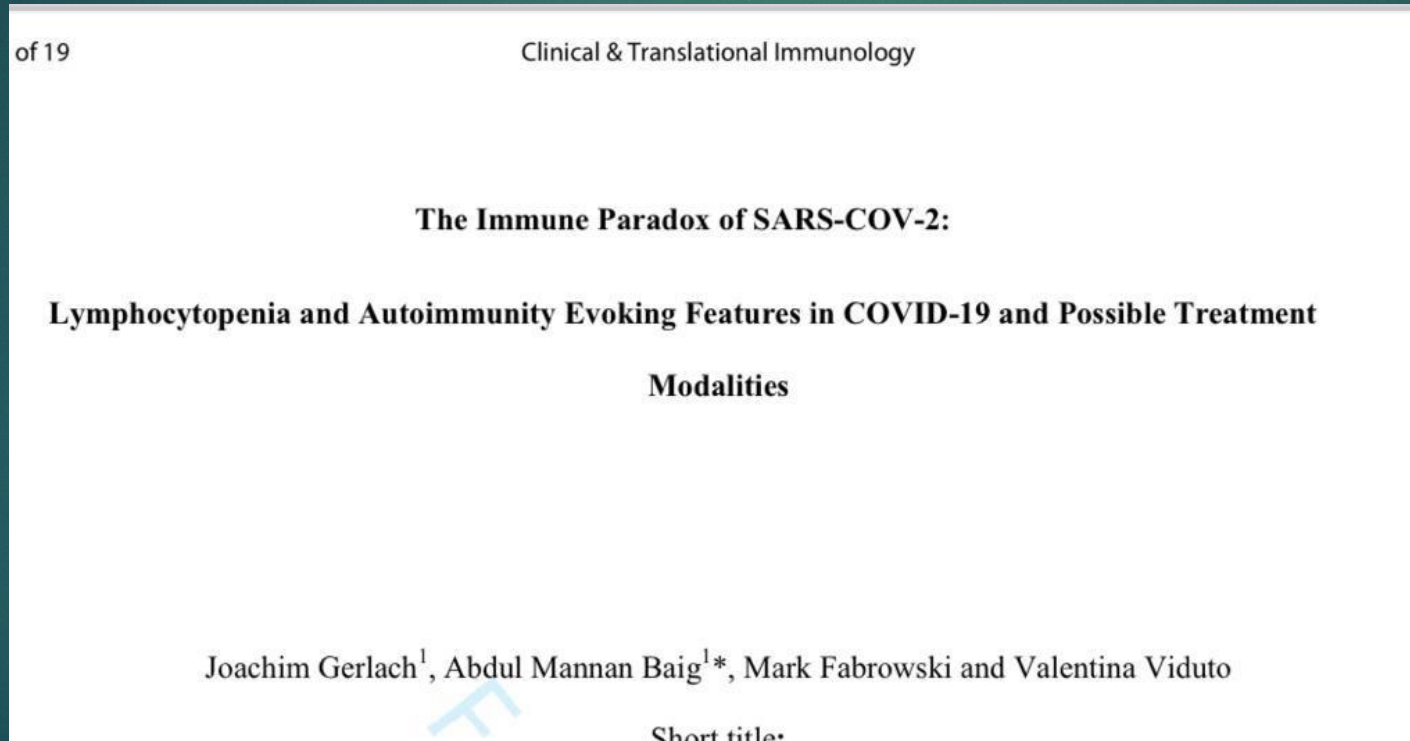
A Natural Impact: NK Cells at the Intersection of Cancer and HIV Disease

Olivier Lucar, R. Keith Reeves, and
Stephanie Jost

NK Cells Have Therapeutic Potential to Enhance Control of Both HIV and HIV-Related Cancers

Long Covid Coalition Collaboration

- ▶ The scientist under the umbrella of the LONGCOVID COALITION have submitted an extensive publication on the subject:





PART 2

Cancer Causing Potential of Sars-CoV-2 and /or Spike proteins

Cancer Causing Potential of Sars-CoV-2

NIH National Library of Medicine
National Center for Biotechnology Information

PubMed.gov

Advanced

Save Em

> Bioessays. 2021 Jun;43(6):e2000331. doi: 10.1002/bies.202000331. Epub 2021 Apr 29.

Cancer as a prospective sequela of long COVID-19

Geetanjali Saini¹, Ritu Aneja¹

Affiliations + expand
PMID: 33914346 PMCID: PMC8206711 DOI: 10.1002/bies.202000331
[Free PMC article](#)

Abstract

As the spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) continues to surge worldwide, our knowledge of coronavirus disease 2019 (COVID-19) is rapidly expanding. Although most COVID-19 patients recover within weeks of symptom onset, some experience lingering symptoms that last for months ("long COVID-19"). Early reports of COVID-19 sequelae, including cardiovascular, pulmonary, and neurological conditions, have raised concerns about the long-term effects of COVID-19, especially in hard-hit communities. It is becoming increasingly evident that cancer patients are more susceptible to SARS-CoV-2 infection and are at a higher risk of severe COVID-19 than the general population. Nevertheless, whether long COVID-19 increases the risk of

- ▶ Herein, we propose that long COVID-19 may predispose recovered patients to cancer development and accelerate cancer progression. This hypothesis is based on growing evidence of the ability of SARS-CoV-2 to modulate oncogenic pathways, promote chronic low-grade inflammation, and cause tissue damage. Comprehensive studies are urgently required to elucidate the effects of long COVID-19 on cancer susceptibility.

Cancer Causing Potential of Sars-CoV-2



 PDF

Research Article

Cancer related-genes enriched in peripheral blood mononuclear cells (PBMCs) of COVID-19 patients. a bioinformatics study

Ehsan Ahmadi, Mostafa Changaei, Alireza Teymouri, Behruz Alipour, and 1 more

- ▶ Accordingly, 17 cell cycle-related genes were up-regulated in SARS-CoV-2 patients including: CCNB2, ESPL1, TTK, CCNA2, CCNB1, CDC6, CDC20, CDK1, BUB1, CHEK1, BUB1B, CDC45, PLK1, CCNA1, ORC1 AND E2F1.
- ▶ Any dysregulation in the expression of these genes is linked with various cancers, such as breast cancer, digestive tract cancer, bone cancer, endometrial cancer, skin cancer, brain cancer, lung cancer and so on.

Cancer Causing Potential of Sars-CoV-2

**Wiley
Online
Library**



BioEssays / Volume 43, Issue 8 / 2000289

HYPOTHESIS | Open Access |

SARS-CoV-2 infection and cancer

Evidence for and against a role of SARS-CoV-2 in cancer onset

- ▶ The ability of SARS-CoV-2's proteins to inhibit both p53 and pRB suggests that SARS-CoV-2 may have an oncogenic potential

Cancer Causing Potential of Sars-CoV-2



- ▶ Here, we explored the oncogenic roles of six coronavirus receptors (ACE2, DPP4, ANPEP, AXL, TMPRSS2, and ENPEP) in GBM using bioinformatics and experimental approaches.
- ▶ We found that ANPEP and ENPEP were significantly increased at both the mRNA and protein levels in GBM compared with normal brain tissue.

Cancer Causing Potential of Sars-CoV-2

nature communications

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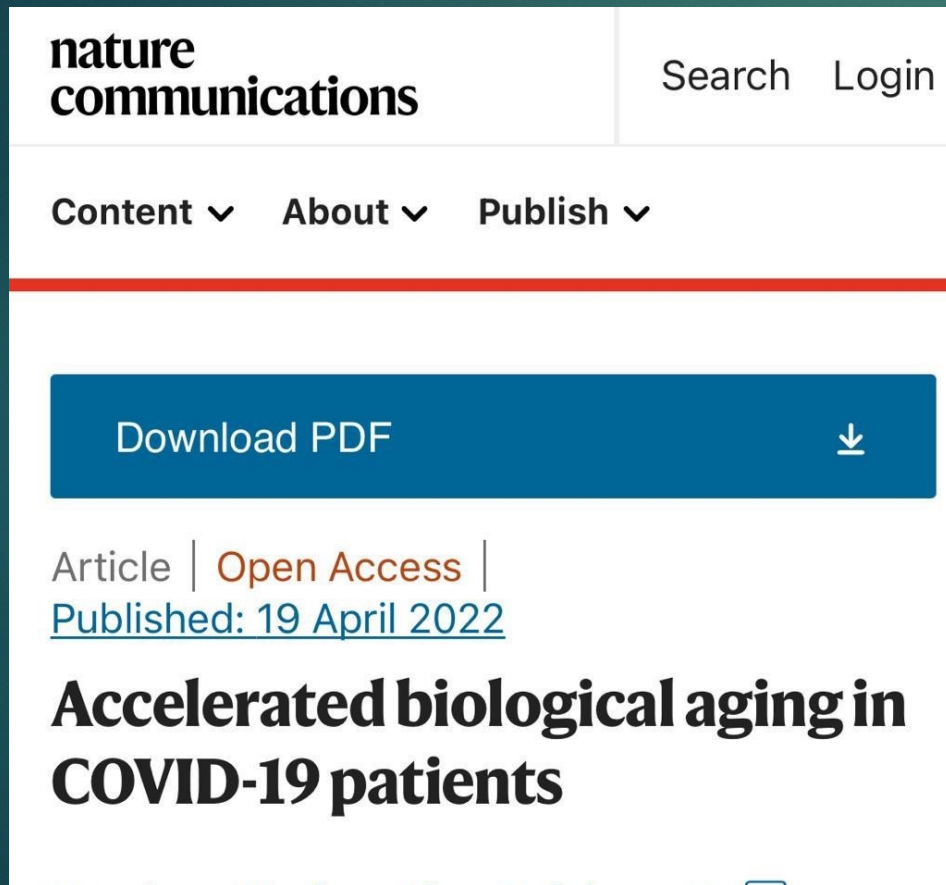
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Article | [Open Access](#) |
[Published: 21 June 2021](#)

SARS-CoV-2-mediated dysregulation of metabolism and autophagy uncovers host-targeting antivirals

- ▶ SARS-CoV-2-infected cells show accumulation of key metabolites, activation of autophagy inhibitors (AKT1, SKP2) and reduction of proteins responsible for autophagy initiation (AMPK, TSC2, ULK1), membrane nucleation, and phagophore formation (BECN1, VPS34, ATG14), as well as autophagosome-lysosome fusion (BECN1, ATG14 oligomers).
- ▶ In sum, SARS-CoV-2 infection activated negative regulators of autophagy, reduced autophagy-enhancing proteins, and limited autophagic flux by diminishing BECN1/ATG14-dependent AL fusion.

Accelerated Aging



The screenshot shows the top portion of a web page from Nature Communications. At the top left is the 'nature communications' logo. To its right are links for 'Search' and 'Login'. Below these are three dropdown menus labeled 'Content', 'About', and 'Publish'. A thick red horizontal line separates the navigation bar from the main content area. In the main content area, there is a blue rectangular button with the text 'Download PDF' and a white download icon (a downward arrow inside a circle). Below the button, the text 'Article | Open Access |' is followed by 'Published: 19 April 2022' in blue. The main title of the article, 'Accelerated biological aging in COVID-19 patients', is displayed in a large, bold, black font.

nature
communications

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Article | Open Access |
Published: 19 April 2022

**Accelerated biological aging in
COVID-19 patients**

Based on our findings, we speculate that the accumulation of epigenetic aging and telomere attrition after SARS-CoV-2 infection might contribute to the post-COVID-19 syndrome, and irreversible epigenetic aging might be served as a biomarker for the risk of developing post-COVID-19 syndrome.

Telomeres in Cancer

nature reviews
molecular cell biology

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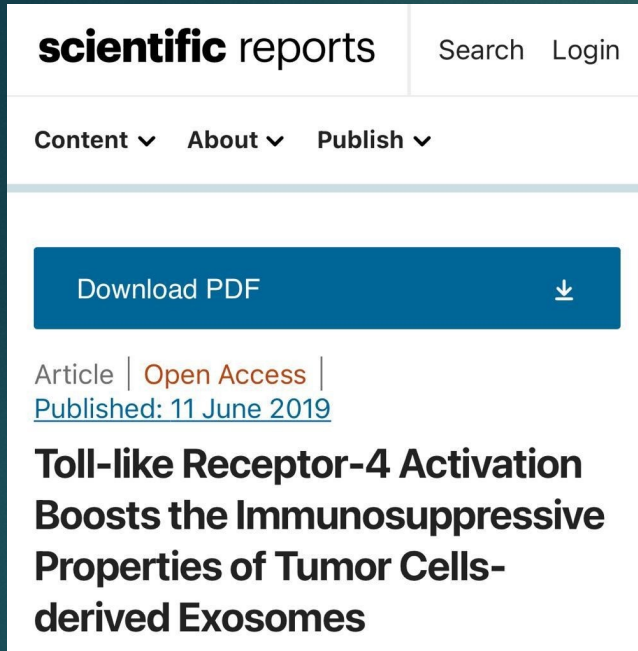
[Published: 18 January 2017](#)

Telomeres in cancer: tumour suppression and genome instability

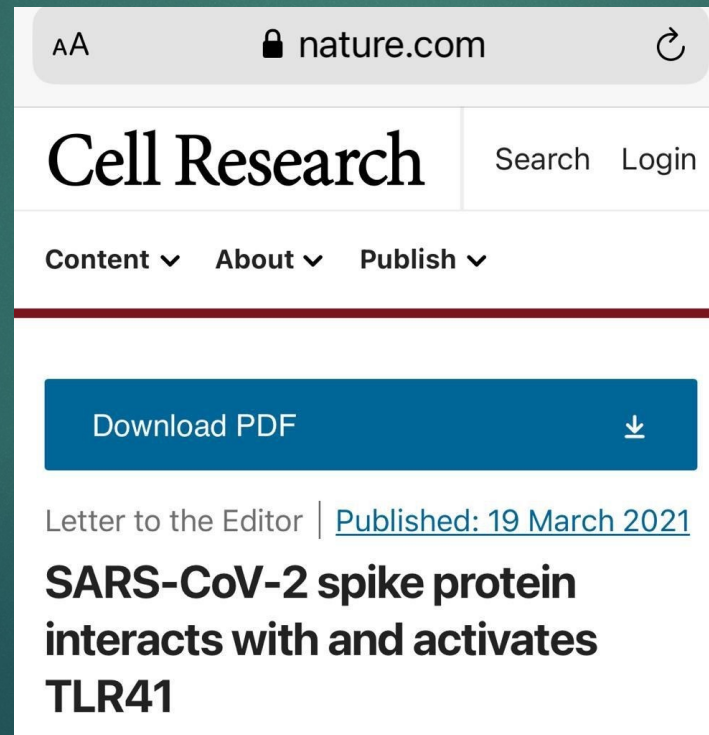
- ▶ RB-deficient and p53-deficient cells continue to experience telomere shortening, which leads to telomere crisis.
- ▶ Telomere crisis has been documented in many cancers, including chronic lymphocytic leukaemia, breast cancer and colorectal adenomas.
- ▶ Telomere crisis can cause a wide array of genomic aberrations, including chromosome deletions and amplifications, translocations, chromothripsis, kataegis and tetraploidization.

TLR4 supports tumour progression

- ▶ Our results suggest that the activation of TLR4 supports tumour progression by stimulating the release of more effective immunosuppressive exosomes, which allow tumour cells to escape immune surveillance and probably even play a role in the metastatic process.



<https://www.nature.com/articles/s41598-019-44949-y>



We recently found that SARS-CoV-2 infection provoked an anti-bacterial like response at the very early stage of infection via TLR4.

<https://www.nature.com/articles/s41422-021-00495-9>



Part 3

Preventive Interventions with Phenolic Compounds and Dietary Supplements

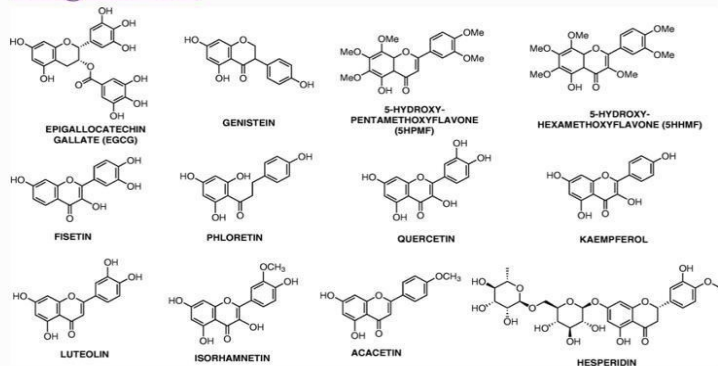
Current cancer research projects of our group:



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Fig. 2

From: [Delivery of natural phenolic compounds for the potential treatment of lung cancer](#)



RESEARCH PROJECTS

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1 ▼ of 1

Next

sort by: date (newest first) ▼

PROJECT

In-Vitro Evaluation on the Anti-Cancer Properties of Nutraceutical Suspension VEDICINALS 9

Health Shield GmbH ♦ 1 Mar 2022 - 28 Feb 2023

[Dua K](#)

Health Shield GmbH



← all experts



DR

Kamal Dua

Senior Lecturer

Pharmacy

Other solutions:



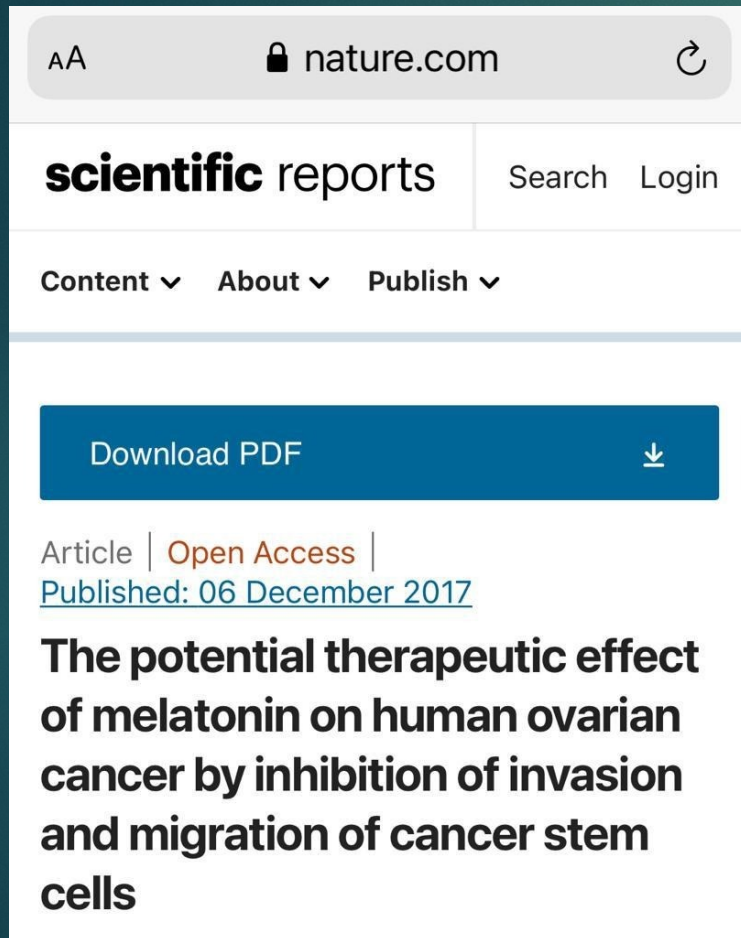
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MONOLAUIN

Use of Melatonin



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Article | [Open Access](#) |
[Published: 06 December 2017](#)

The potential therapeutic effect of melatonin on human ovarian cancer by inhibition of invasion and migration of cancer stem cells

<https://www.nature.com/articles/s41598-017-16940-y>



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Cell Death & Disease Search Login

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[Published: 16 July 2021](#)

Melatonin inhibits triple-negative breast cancer progression through the Lnc049808-FUNDC1 pathway

<https://www.nature.com/articles/s41419-021-04006-x>

AA nature.com

nature communications Search Login

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Article | [Open Access](#) |
[Published: 01 July 2021](#)

Microbial short-chain fatty acids modulate CD8⁺ T cell responses and improve adoptive immunotherapy for cancer

<https://www.nature.com/articles/s41467-021-24331-1>

OncoTargets and therapy

Dove Press

Sodium Butyrate Selectively Kills Cancer Cells and Inhibits Migration in Colorectal Cancer by Targeting Thioredoxin-1

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7263851/>

Use of phytochemicals

- ▶ Phytochemicals such as curcumin, resveratrol, epigallocatechin gallate (EGCG), quercetin, sulforaphane, have been shown to suppress breast carcinoma via modulation of various signalling transduction pathways, genes and gene products. (Quotation shortened!)

19:49
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ROYAL SOCIETY OF CHEMISTRY

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DOI: [10.1039/C8RA04879G](https://doi.org/10.1039/C8RA04879G) (Review Article) *RSC Adv.*, 2018, 8, 29714-29744

Mechanistic evaluation of phytochemicals in breast cancer remedy: current understanding and future perspectives

Muhammad Younas^a, Christophe Hano^b, Nathalie Giglioli-Guivarc'h^c and Bilal Haider Abbasi  ^{*abc}

^a Department of Biotechnology, Quaid-i-Azam

AA nature.com

scientific reports Search Login

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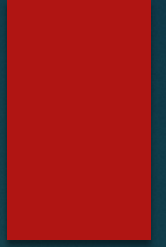
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Article | [Open Access](#) |
Published: 27 July 2017

Hydrogen sulphide donors selectively potentiate a green tea polyphenol EGCG-induced apoptosis of multiple myeloma cells

<https://www.nature.com/articles/s41598-017-06879-5>

Finishing Remarks



4th Long Covid Coalition Congress – Neuro Covid

Saturday 25th June, 2022
@ 14:00 ET / 19:00 UK time



SPEAKER 1



Dr Leo O'Leary
USA

SPEAKER 2



Rachel Jessy MSc
UK

SPEAKER 3



Stephanie Dorell PhD
Hawaii

SPEAKER 4



Dr Hannah Daly
Poland



Valentina Viduto, PhD
UK



Joachim Gerlach
Germany



Dr Kamel Das
Australia



Dr Shankara Chetty
South Africa



Dr Philip McMillan

PANELISTS

3:27:54

4th International Long Covid Coalition Conference - Neuro Covid

1.4K views • Streamed 1 month ago



Long Covid-19 Foundation

Website: www.longcovifdn.com Long Covid Coalition: www.longcovid-coalition.com For collaboration

Long Covid Coalition Congress – Thrombosis and Coagulation

Sunday 22nd May, 2022
@ 12:00 ET / 17:00 UK time



MODERATOR



Dr Paul Morris
USA

SPEAKER 1



Dr Stefan Knebel
Germany

SPEAKER 2



Dr Rainer Jäger
Germany

SPEAKER 3



Dr Abdul Hameed Bhatti
Pakistan

SPEAKER 4



Dr Daniel Egnor
USA



Valentina Viduto, PhD
UK



Joachim Gerlach
Germany



Dr Shankara Chetty
South Africa



Dr Marek Cabrowski
UK



Prof Aneta Baranowska
USA



Dr Philip McMillan

PANELISTS

3:19:32

3rd Long Covid Coalition Congress – Thrombosis and Coagulation

1.4K views • Streamed 2 months ago



Long Covid-19 Foundation

Long Covid Coalition (Long Covid-19 Foundation, Vedicinals9 and Vejon Health) is pleased to host the third international



2:31:53

Long Covid Coalition 2nd Congress - FULL VERSION

539 views • Streamed 2 months ago



Long Covid-19 Foundation

Website: www.longcovifdn.com 2nd Long Covid Coalition congress which brought together leading researchers and doctors.



Long Covid Solutions Congress 2022













2:43:54

Long Covid Solutions Congress - March 2022

7.3K views • Streamed 4 months ago



Vejon Health

Timecodes 0:00 Intro 07:32 Meet the Speakers and Panel 12:55 Spotlight: Valentina Viduto PhD, Long Covid Charity - UK 16:28..

If you need more science:
Please watch our congresses to get a full scientific picture of all the conditions discussed today.



Thank you!

joachim.gerlach@medicinals.com