

PANDEMİK CORONA VİRÜSÜNE KARŞI DIŞA BAĞIMLILIĞI AZALTACAK İLAÇLARIN YENİ SENTEZ YÖNTEMLERİYLE GELİŞTİRİLMESİ

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ISTANBUL MEDİPOL UNIVERSITY
REGENERATIVE AND RESTORATIVE
MEDICINE RESEARCH CENTER



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**2017-2019-Associate Professor @ İstanbul Medipol University, International School of
Medicine, Department of Molecular Medicine and Biotechnology (Chair), İstanbul,
TURKEY**

**2014-2017-Assistant Professor @ İstanbul Medipol University, International School of
Medicine, Department of Medical Pharmacology (Chair), İstanbul, TURKEY**

**2001-2014-Lab Manager and Senior Principal Investigator-TransTech Pharma Inc.
Medicinal Chemistry Laboratories, High Point, NC**

2000-Research Scientist-ArQule Inc., Synthetic Chemistry Laboratories, Woburn, MA

1997-2000-Research Assistant-Bioorganic and Medicinal Chemistry Laboratories,

Mustafa GUZEL, Ph.D

- M. Sc. and Ph. D. Degrees Medicinal Chemistry
 - Clemson University, Clemson, SC in 1996 and 2000
- ArQule Inc. Sr. Synthetic Organic Chemist
- TransTech Pharma Inc. in High Point, NC 2001-2014
 - Managerial Positions, Medicinal Chemistry
 - Currently holds ~ 80 patents for treatment of cancer, diabetes, COPD, RA, Oxidative Stress, Microbial treatment, and obesity
 - 70+ publications in peer reviewed journals, presentations and posters
- Faculty position at International School of Medicine
 - Department of Medical Pharmacology at Istanbul Medipol University
- Director of Drug Discovery and Development Research Center

RESEARCH INTERESTS: Research and development in medicinal chemistry specifically cancer/cancer metabolism and kinase inhibitors, GPCRs for the treatment of diabetic disorders (NIDDM), obesity, CNS and neurodegenerative disorders (ALS), Alzheimer's and Parkinson's disease), and inflammatory disorders (COPD, RA).

Global trust in professions

Who do global citizens trust?

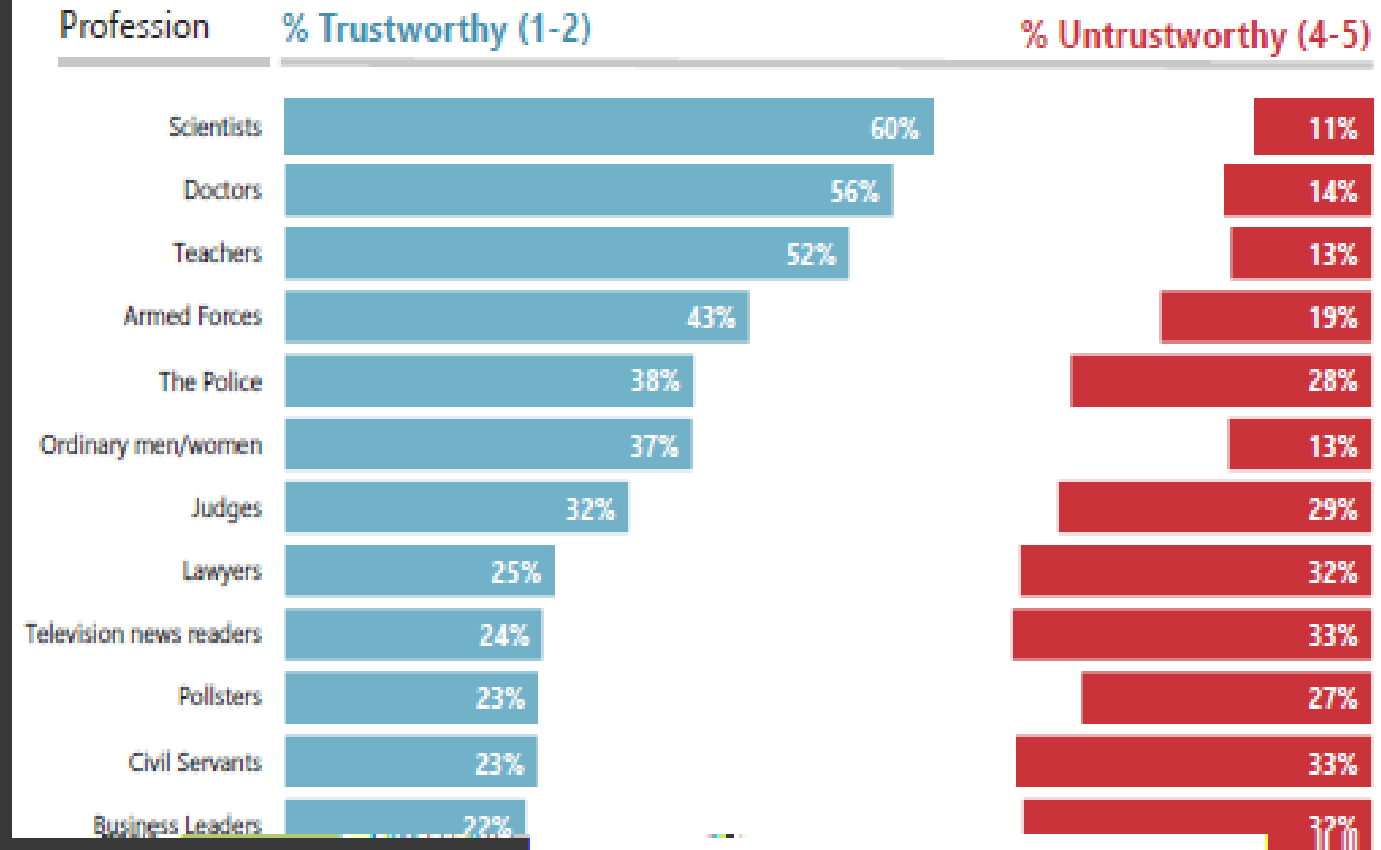
<https://www.ipsos.com/sites/default/files/ct/news/documents/2019-09/global-trust-in-professions-ipsos-trustworthiness-index.pdf>

Please look at this list of different types of people. In general, do you think each is trustworthy or untrustworthy in [COUNTRY]?

Please use a scale of 1 to 5, where 1 is very trustworthy and 5 is very untrustworthy.

All countries ranking

Scientists are seen as the most trustworthy profession globally, followed by doctors and teachers.



Politicians and government ministers are the least trustworthy.



88%
82%
81%
80%
77%
64%



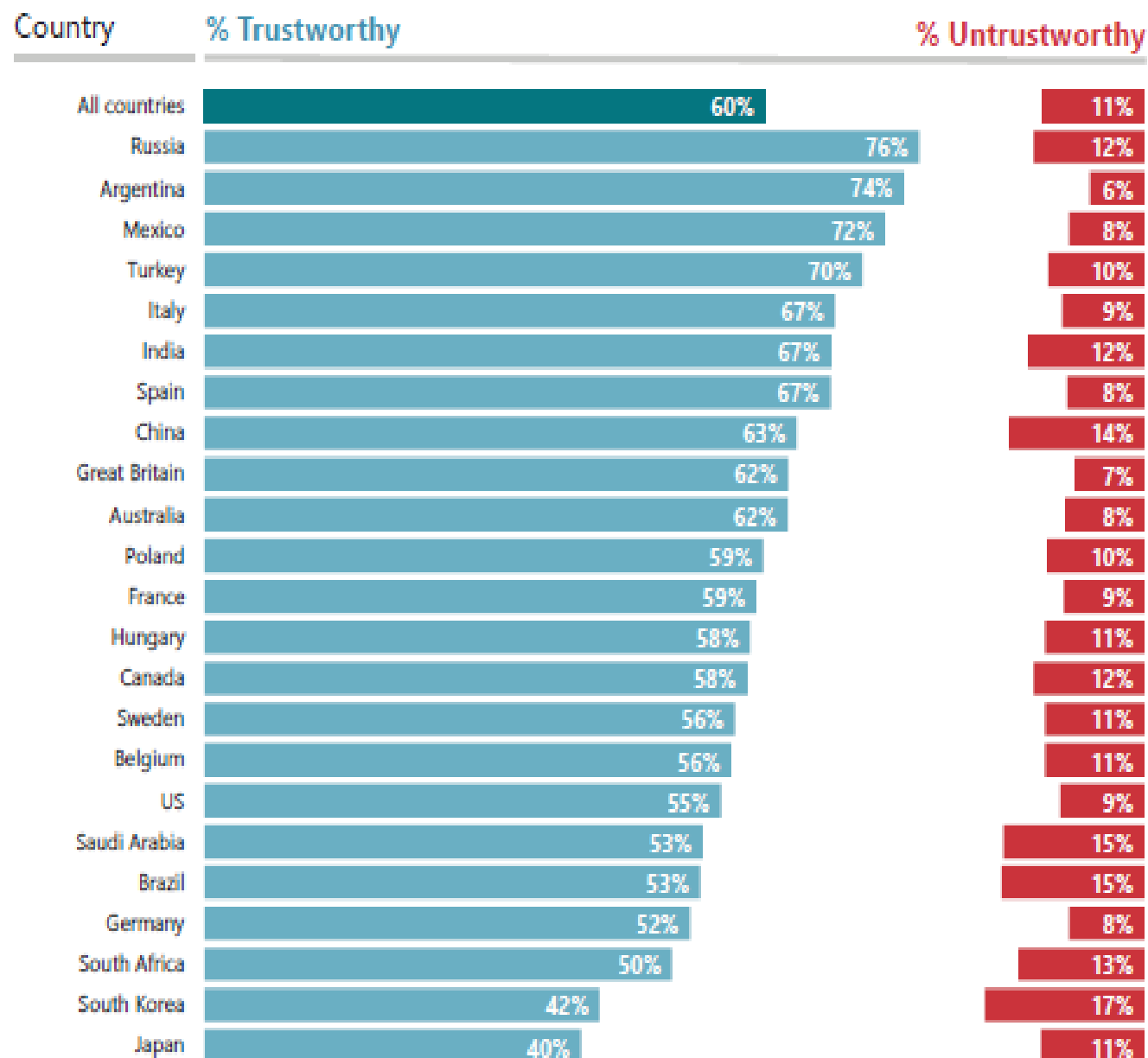
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Scientists

Russians are most likely to consider scientists to be trustworthy.

Even though South Korea and Japan come bottom of the global ranking, scientists remain the most trusted profession in both states.

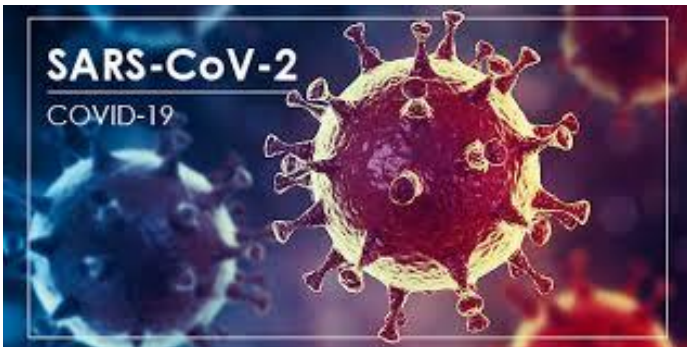
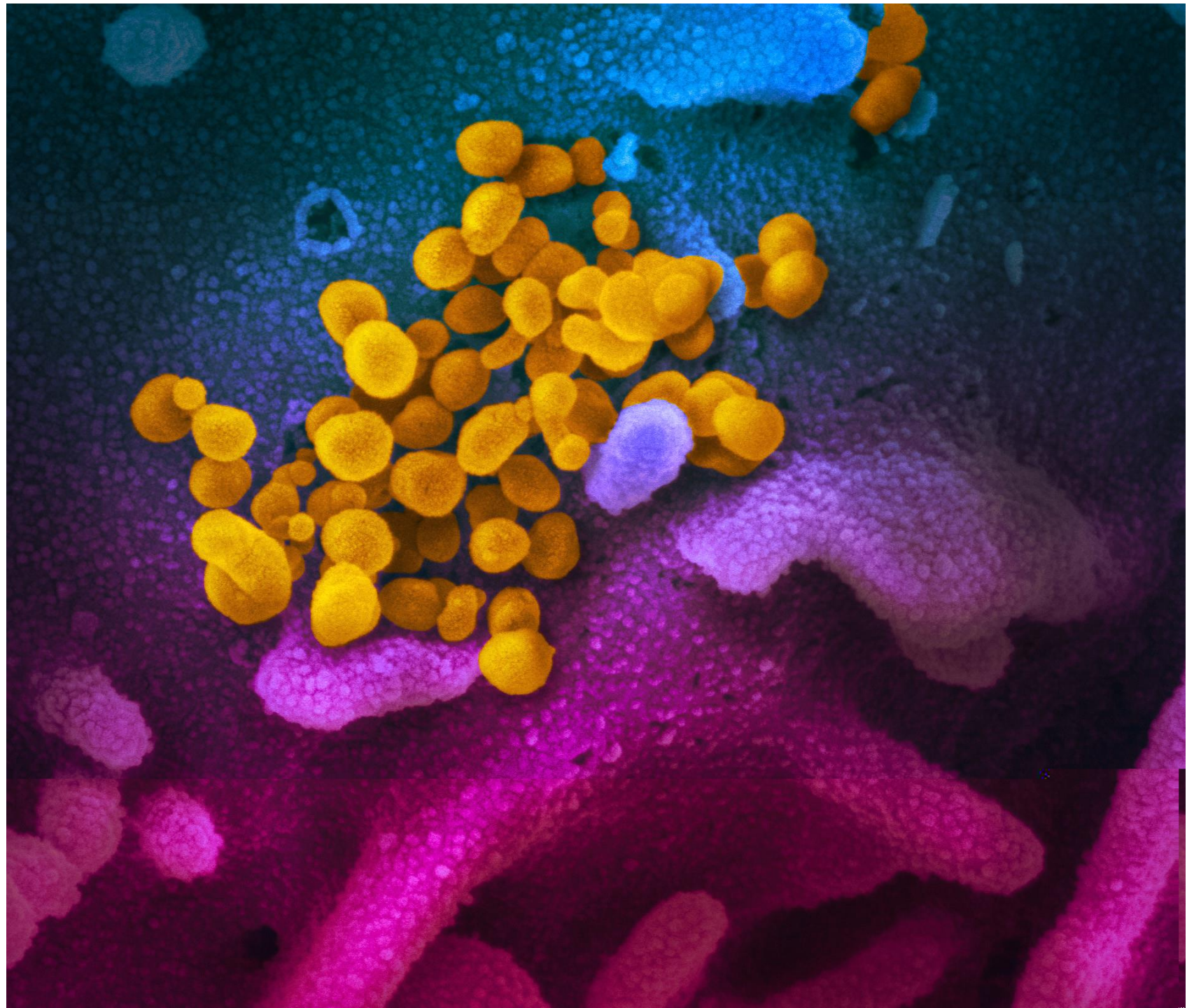


Base: 19,587 online adults aged 16-74 across 23 countries

SARS-CoV-2 (yellow)

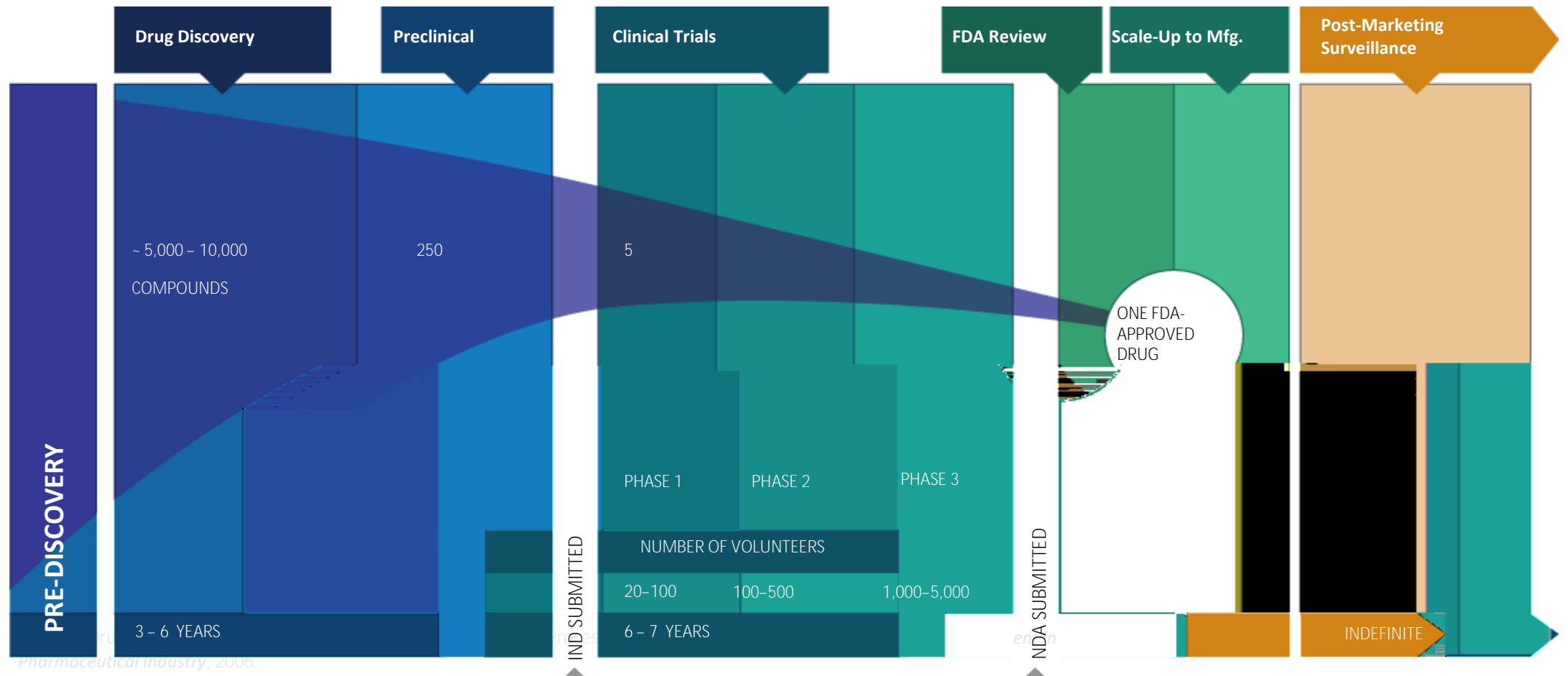
NIAID Rocky Mountain Laboratories (RML), U.S. NIH -
<https://www.niaid.nih.gov/news-events/novel-coronavirus-sarscov2-images>

This scanning electron microscope image shows SARS-CoV-2 (yellow)—also known as 2019-nCoV, the virus that causes COVID-19—isolated from a patient in the U.S., emerging from the surface of cells (blue/pink) cultured in the lab.



Drug discovery and development is difficult and requires significant infrastructure and resources but it is not impossible

Developing a new medicine takes an average of 10–15 years; the Congressional Budget Office reports that “relatively few drugs survive the clinical trial process”



SARS-CoV-2 Antiviral Drug Treatment Options:

No drug has yet been approved to treat coronavirus infections in humans.^[103] Research into potential treatments for the disease was initiated in January 2020, and several antiviral drugs are already in clinical trials.^{[91][92]} Although completely new drugs may take until 2021 to develop,^[104] several of the drugs being tested are already approved for other antiviral indications, or are already in advanced testing.^[103]

Antivirals being tested include [chloroquine](#),^[105] [darunavir](#),^[106] [galidesivir](#),^[103] [interferon beta](#),^[107]^[better source needed] the [lopinavir/ritonavir](#) combination,^{[92][105]} the RNA polymerase inhibitor [remdesivir](#),^{[107][108][109]} and [triazavirin](#).^[110]^[better source needed] [Umifenovir](#) (Arbidol) and darunavir were proposed by the National Health Commission.^[111]^[better source needed]

Remdesivir and chloroquine effectively inhibit the coronavirus [in vitro](#).^[105]

Preliminary results from a multicentric trial, announced in a press conference and described by Gao, Tian, and Yang, suggested that chloroquine is effective and safe in treating COVID-19 associated pneumonia, "improving lung imaging findings, promoting a virus-negative conversion, and shortening the disease course".^[68]

Currently, there are no FDA approved treatments for COVID-19.

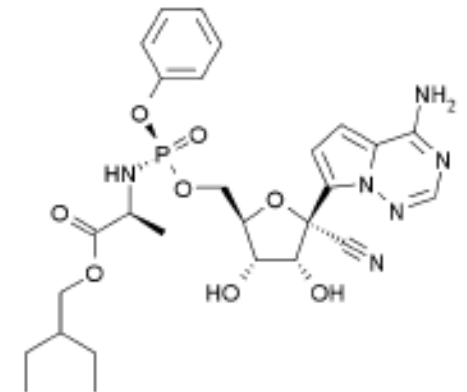
- Several pharmaceutical companies and research organizations worldwide are involved in the development of potential vaccines.
- **mRNA-1273** A novel coronavirus vaccine called mRNA-1273 (Moderna, Inc.) has been [shipped](#) to the National Institute of Allergy and Infectious Diseases ready for use in a Phase 1 [study](#).
- Tonix Pharmaceuticals Holding Corp. has [announced](#) it is researching the development of a potential vaccine against COVID-19 using its proprietary horsepox virus platform.
- Researchers in Israel are working to [adapt](#) a vaccine that is effective against avian coronavirus Infectious Bronchitis Virus (IBV) to work as a vaccine against COVID-19 in humans.
- **Remdesivir** An investigational antiviral drug called [remdesivir](#) is being [studied](#) in clinical trials in China and Nebraska, USA.
- **Lopinavir and ritonavir** A drug combination called [lopinavir/ritonavir](#) approved to treat HIV under the brand name Kaletra is being studied in combination with the flu drug [oseltamivir](#) (Tamiflu) in Thailand. It was [reported](#) on February 18, 2020 that an elderly Chinese woman, the first patient to receive the "Thai cocktail" in Bangkok's Rajvithi Hospital, had made a complete recovery after suffering from severe COVID-19-related pneumonia.
- **Favipiravir** An antiviral drug called favipiravir which was [reported](#) February 17, 2020 to have received marketing approval in China for the treatment of influenza, was also approved for use in clinical trials as a treatment for novel coronavirus pneumonia.
- **Fingolimod** An approved drug called [fingolimod](#) (marketed under the brand name Gilenya for the treatment of relapsing forms of multiple sclerosis) is being [studied](#) as a treatment for COVID-19 at the First Affiliated Hospital of Fujian Medical University in Fuzhou, China.
- **Methylprednisolone** A widely used glucocorticoid called [methylprednisolone](#) is being [studied](#) for safety and effectiveness in the treatment of novel coronavirus pneumonia in a number of hospitals in the Hubei province of China.
- **Chloroquine phosphate** The older anti-malaria drug [chloroquine](#) has been shown to have a wide range of antiviral effects, including anti-coronavirus. [Studies](#) in Guangdong Province in China suggest that chloroquine may help improve patient outcomes in people with novel coronavirus pneumonia.
- **Bevacizumab** A VEGF inhibitor called [bevacizumab](#) (marketed under the brand name Avastin for certain types of cancer) being [studied](#) as a treatment for acute lung injury (ALI) and acute respiratory distress syndrome (ARDS) in critically ill patients with COVID-19 pneumonia at the Qilu Hospital of Shandong University in Jinan, China.

List of Drugs for Covid-19:

- **Characterization of orally efficacious influenza drug with high resistance barrier in ferrets and human airway epithelia**
- **Remdesivir** An investigational antiviral drug called [remdesivir](#) is being [studied](#) in clinical trials in China and Nebraska, USA.
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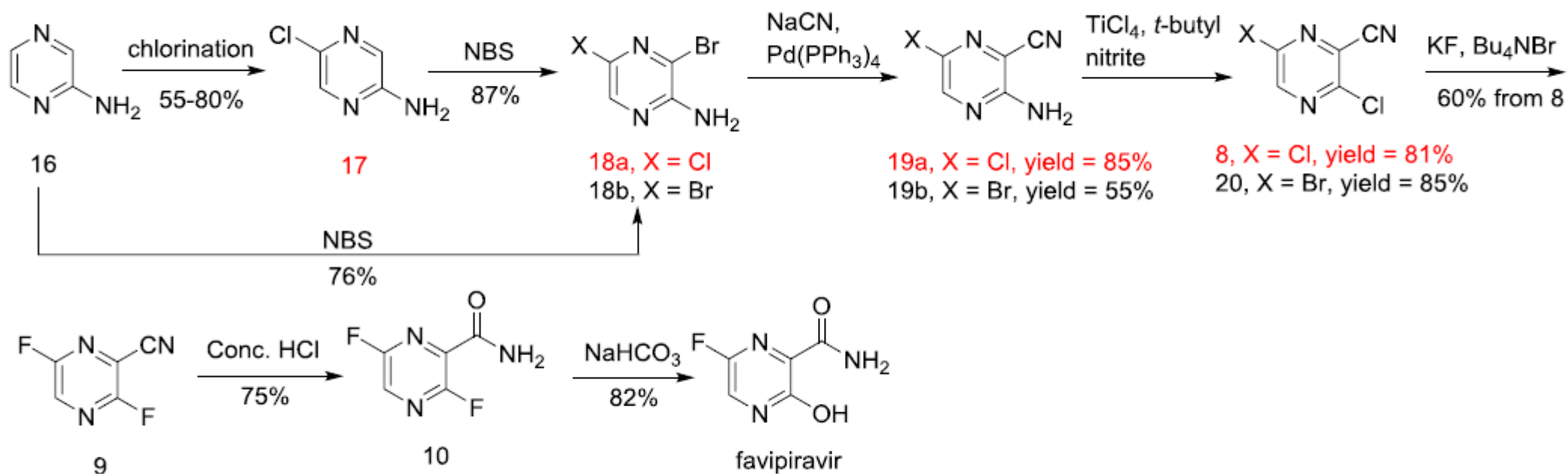
Favipiravir



GS-5734, Remdesivir

Drugs for Covid-19: FAVIPIRAVIR

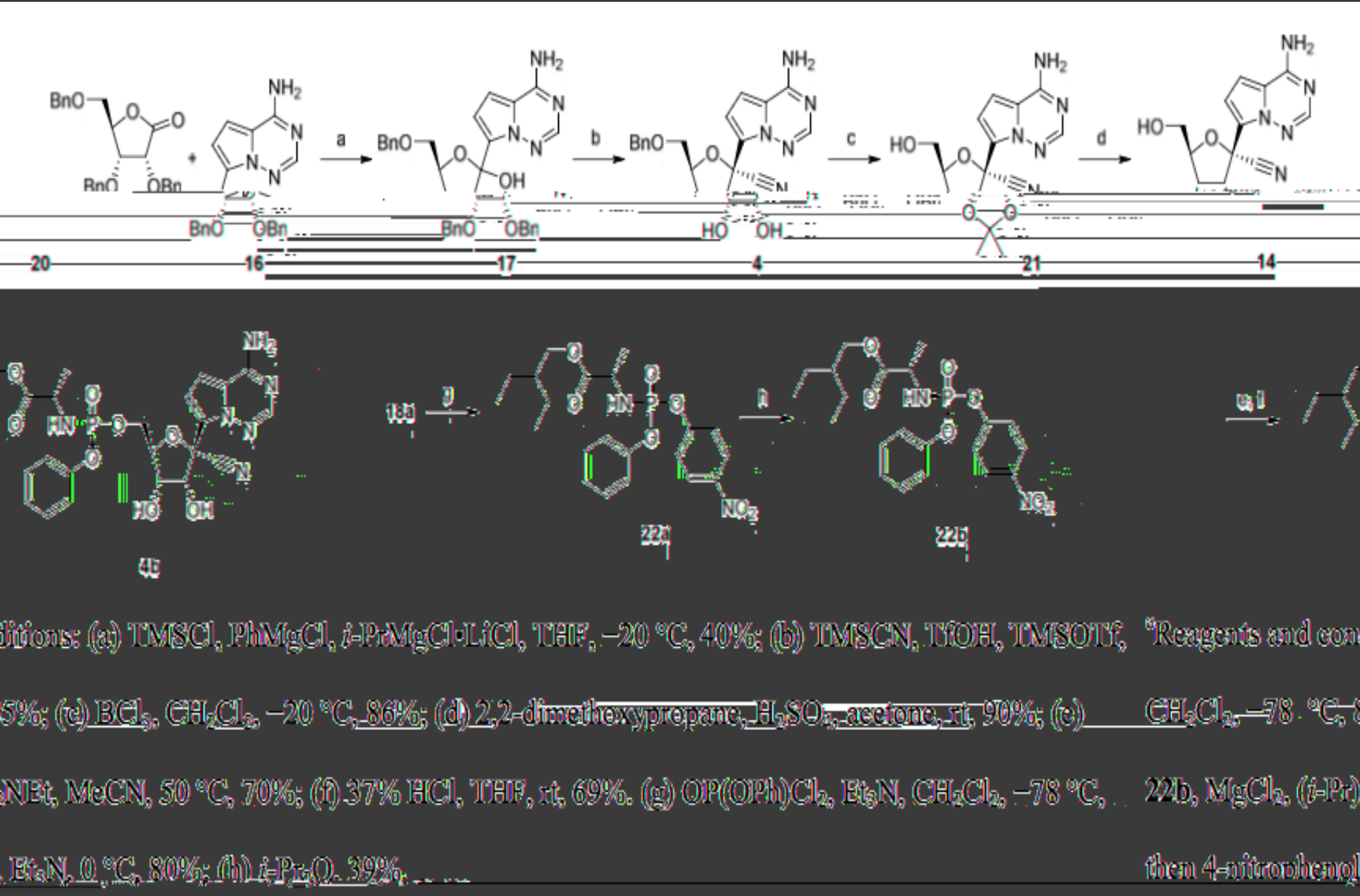
Chemical Papers



Scheme 4 Our synthetic approach to favipiravir in this paper and the preferred route was highlighted in red

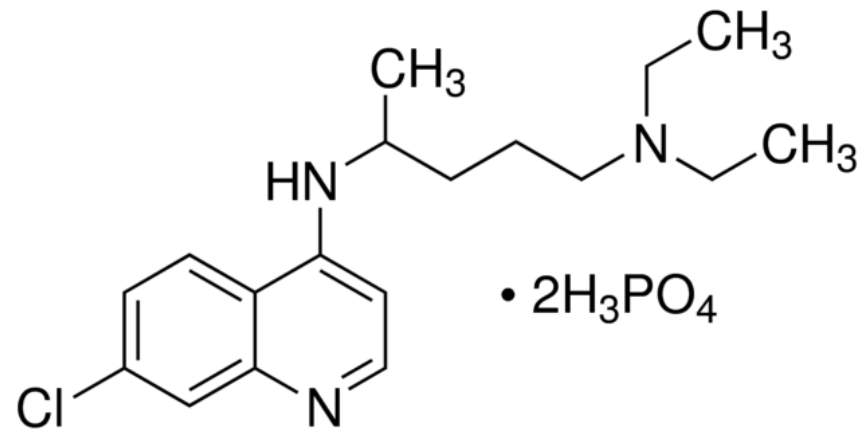
Remdesivir Synthesis

Based on success against other coronavirus infections, Gilead provided remdesivir to physicians who treated an American patient in [Snohomish County, Washington](#) infected with SARS-CoV-2 and is providing the compound to China, to conduct a pair of trials in infected individuals with and without severe symptoms.^[7]

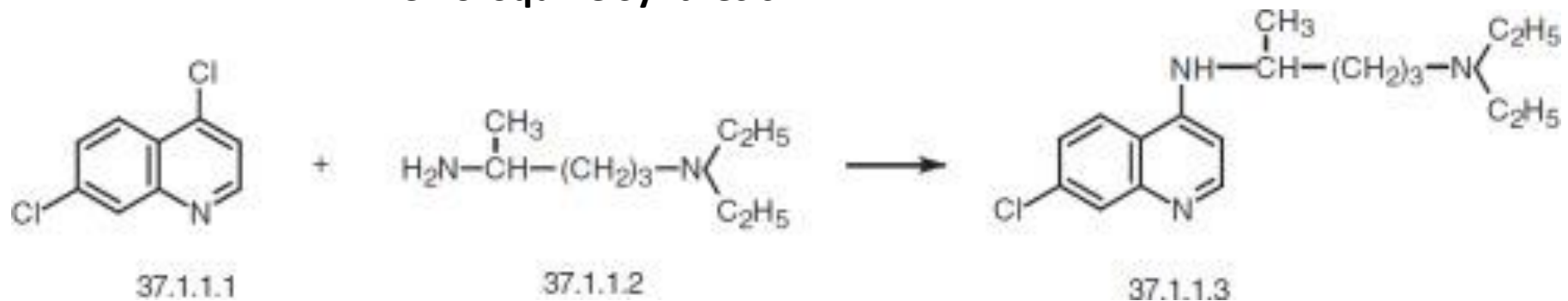


List of Drugs for Covid-19:

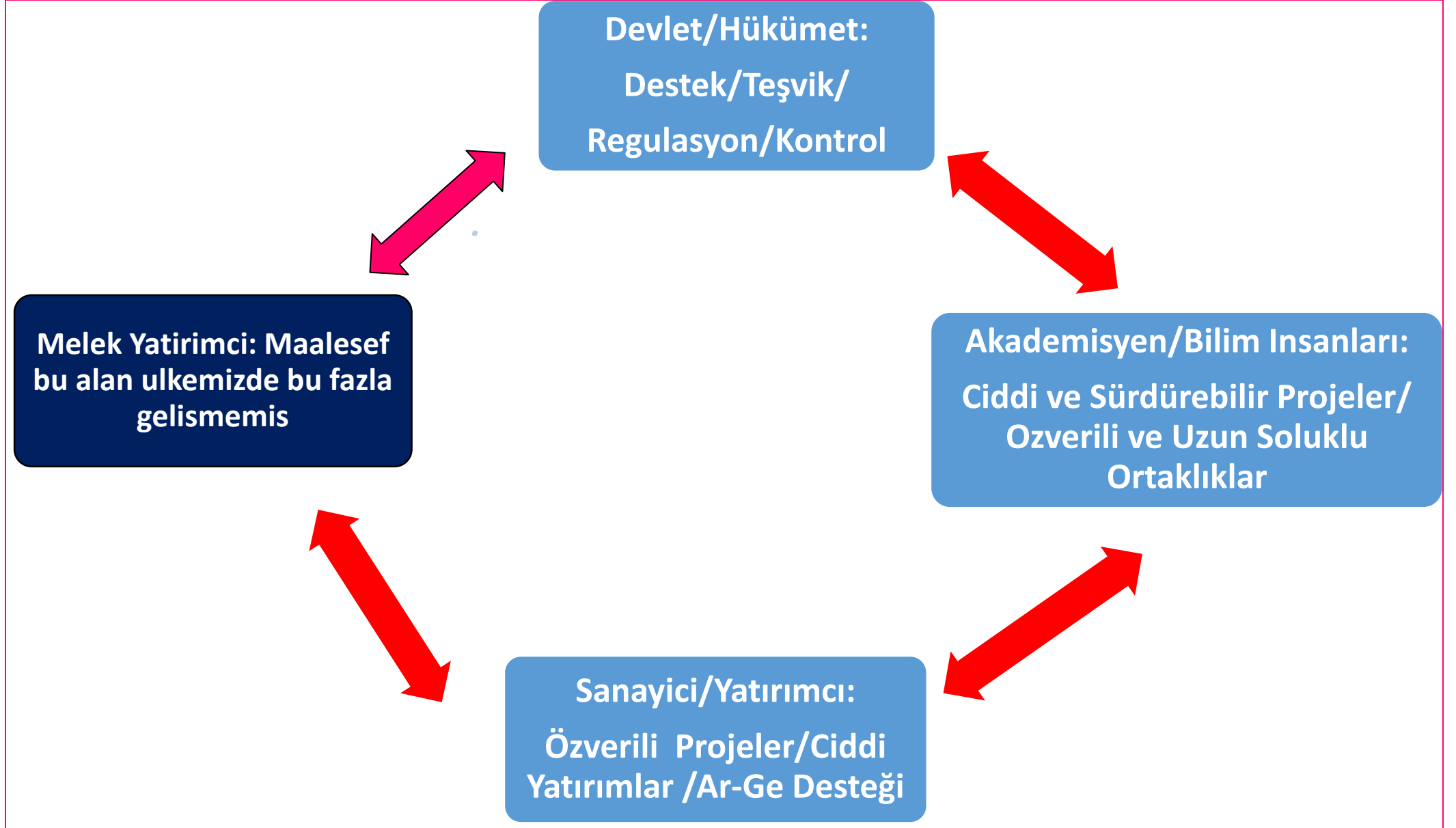
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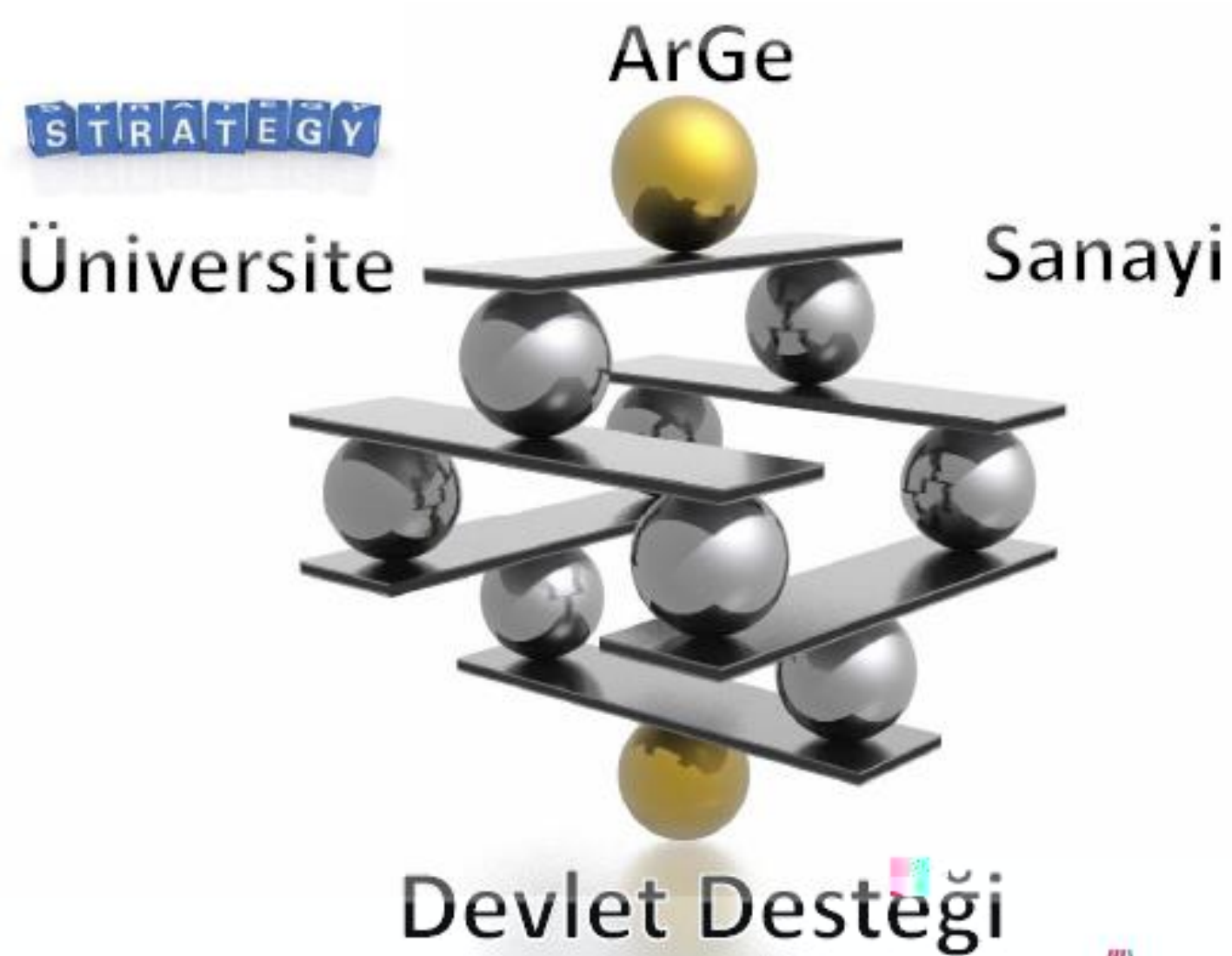
Chloroquine Synthesis



YERLİ İLAÇ: ÇÖZÜM ÖNERİSİ



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Gelirlerin ve kârlılığın arttırılması
Ar-Ge harcamaları için çok önemlidir.

Türkiye bitmiş ilaç ürünlerinde **ArGe** ve **üretim üssü** olabilir.

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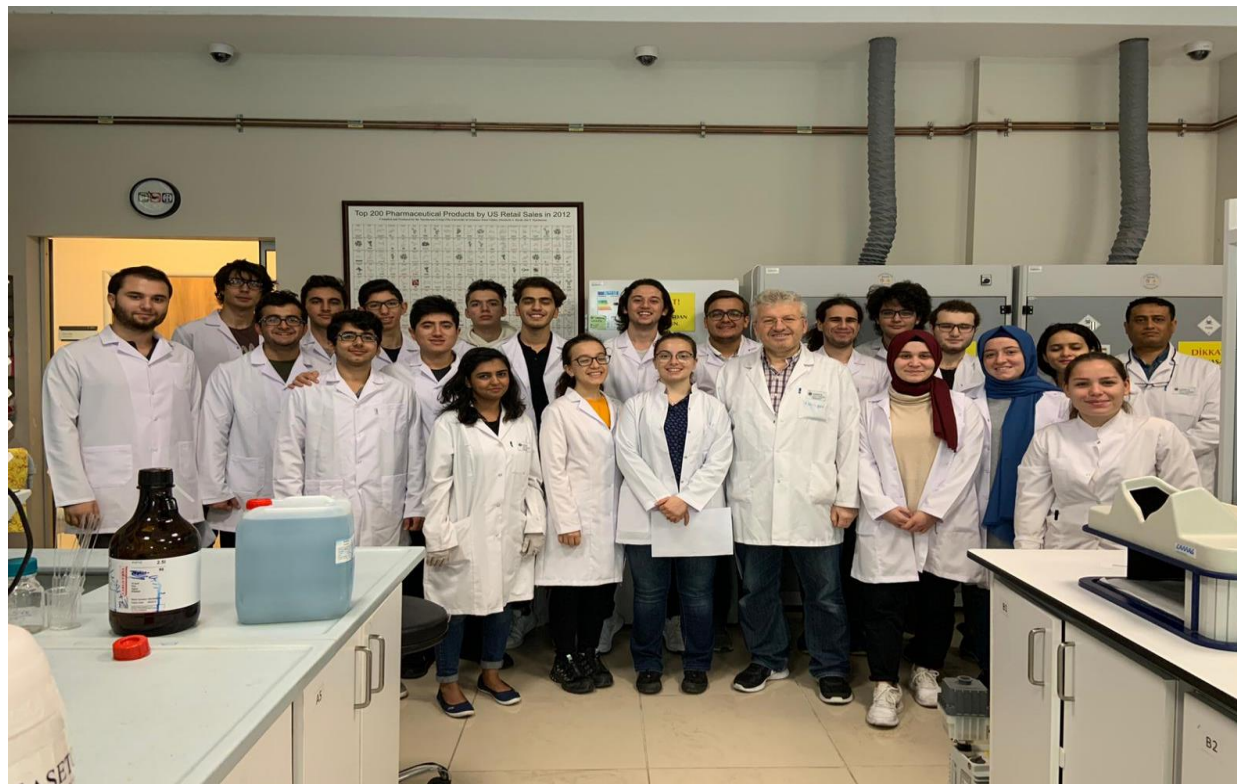
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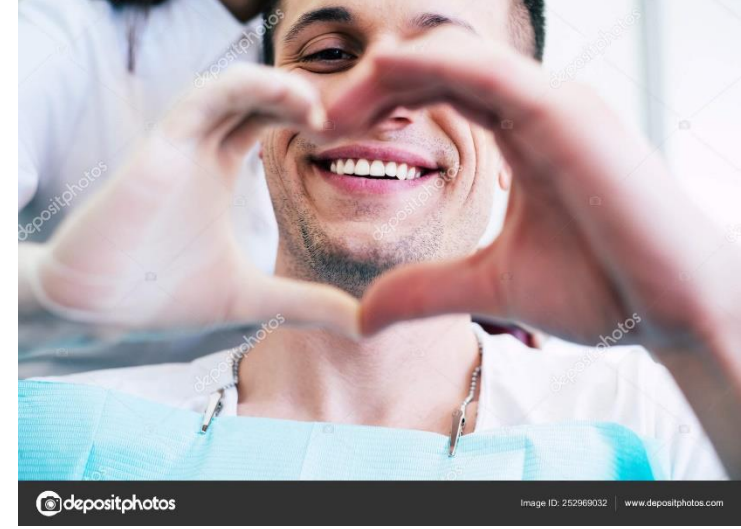
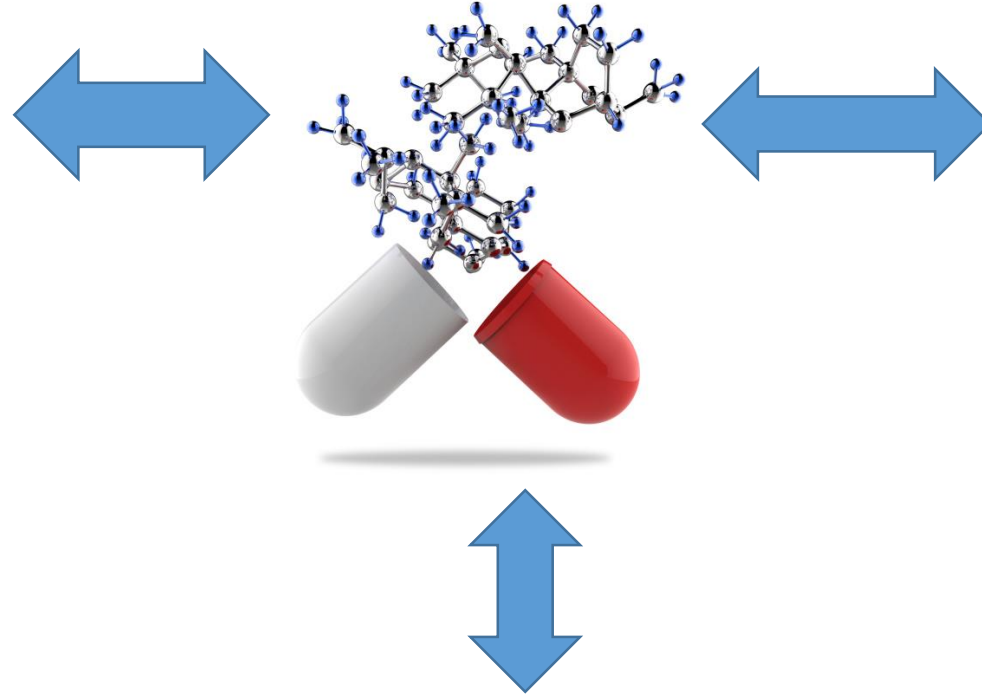
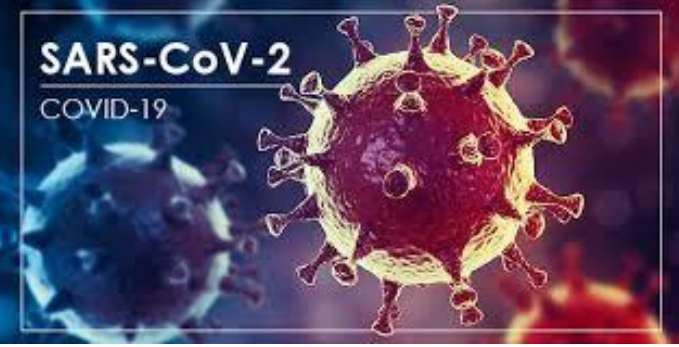
RESEARCH OPPORTUNITIES AT ISTANBUL MEDIPOL UNIVERSITY CENTER OF DRUG DISCOVERY AND DEVELOPMENT

OPEN POSITIONS



Dynamic, motivated, energetic post-doctoral researchers and Ph.D. students are needed in our group to study on various molecular discovery programs. Post-doctoral researchers are expected to possess a broad understanding of drug discovery and development process with Organic/Medicinal Chemistry background. Ph.D. students are expected to have a B.Sc. degree in life sciences or pharmacy area with a good academic credentials. Suitable candidates are highly encouraged to apply those positions with their CV directly to mguzel@medipol.edu.tr.

THANK YOU FOR YOUR ATTENTION!!!



BENİ SABIRLA DİNLEDİĞİNİZ İÇİN TEŞEKKÜR EDİYOR VE GÜZEL GÜNLER GÖRMEK ÜMİDİYLE VAR GÜCÜMÜZLE MÜCADELEYE DEVAM DİYORUM