CLEARPOINT
Pharmacy & Compounding Centre

# *MoInupiravir*

## *For The Treatment of Feline Infectious Peritonitis ( FIP)*

## *Mechanism, Evidence and Clinical Application*

Hosted by Clearpoint Pharmacy

Thank you for joining us today!

**Housekeeping:**

- This session is being recorded.
- Duration: 60 minutes, including Q&A.
- Please submit your questions anytime using the chat box.
- For technical help: use the Zoom chat or email info@clearpointpharmacy.com

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# Meet Our Speakers

**Dr. Samantha Evans, DVM, PhD, DACVP, DACVM**

- Assistant Professor, Colorado State University
- Research focus: advancing diagnostics and therapeutics for infectious diseases, with a specialty in FIP

**Dr. Sally Coggins**

- Dr Sally Coggins, BVSc (Hons I), MANZCVS (Medicine of Cats), PhD. Postdoctoral Research Fellow in Diseases and Treatment of Cats
- Research focused: Feline virology and pharmacology



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# Molnupiravir for the Treatment of Feline Infectious Peritonitis (FIP): Mechanism, Evidence, and Clinical Application

**Samantha Evans** DVM, PhD, DACVP, DACVM
Colorado State University, samantha.evans@colostate.edu

**Sally Coggins** BVSc (hons I), PhD, MANZCVS (Medicine of Cats)
The University of Sydney. sally.coggins@sydney.edu.au

**19th November, 2025 | Clearpoint Pharmacy**

# Speaker Disclosure

## FINANCIAL DISCLOSURE:

**Coggins:** I have delivered many webinars and lectures with honorarium on the topic of FIP treatment developments, including sponsored lectures by compounding pharmacies. Current research support: EveryCat, Australian Companion Animal Health Foundation, Rose June Bullock Bequest, Cat Protection Society NSW.

**Evans:** I have delivered many webinars and lectures with honorarium on FIP diagnosis and treatment, including lectures sponsored by compounding pharmacies. Current research support: EveryCat, Morris Animal Foundation, Best Friends Animal Society, Stokes Pharmacy (supplying GS-441524 tablets).

## UNLABELED/UNAPPROVED USES DISCLOSURE:

We will discuss off-label use of FDA approved and EUA drugs, as well as unlicensed use of crowd-sourced medications that are currently not approved for use in animals in the USA.

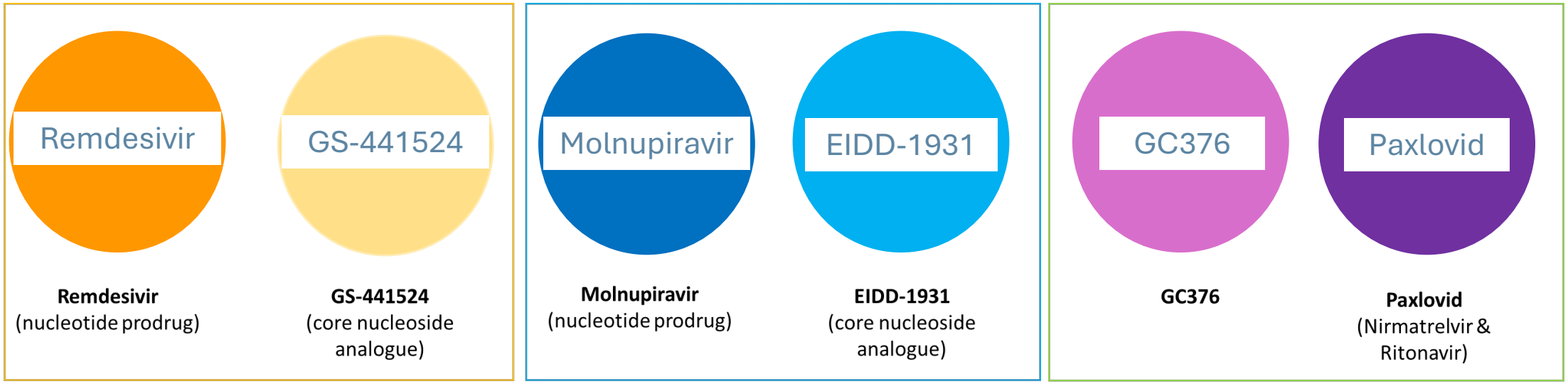
These include: Remdesivir, GS-441524, molnupiravir, EIDD-1931, Paxlovid (Nirmatrelvir) and GC376

THE UNIVERSITY OF SYDNEY

# Outline

- Introduction to antiviral drugs used for FIP treatment
- Antiviral drug availability in Canada
- The differences in antiviral mechanisms of action (and why you should care)
- Treatment outcomes – What is the literature showing us?
- When should we use Molnupiravir / EIDD-1931
- Current treatment protocols
- Case Example(s)
- Questions

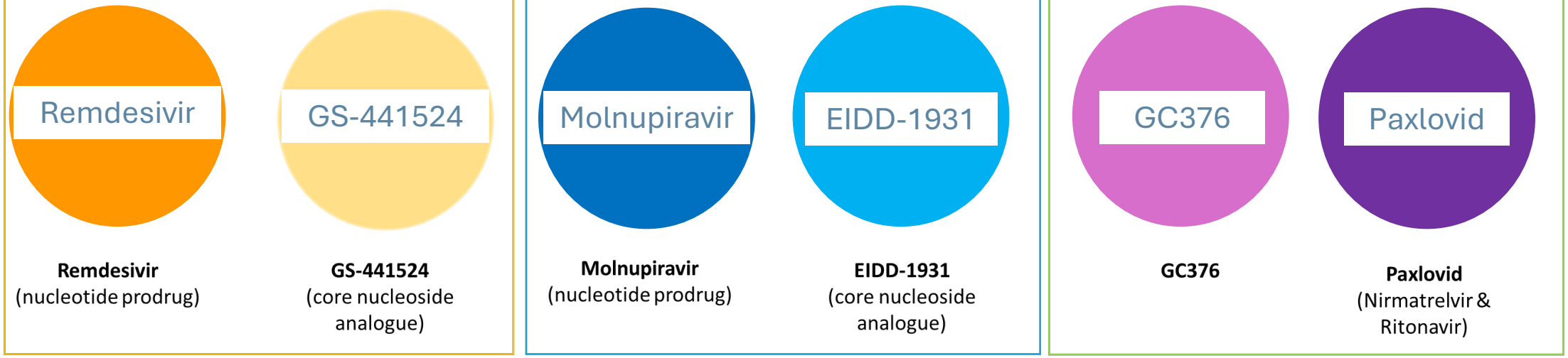
# What are we using to treat FIP?




Nucleotide/nucleoside analogues

Protease inhibitors

# What can vets in Canada legally prescribe?




**Off-label Prescription**
IV Injectable (Veklury)

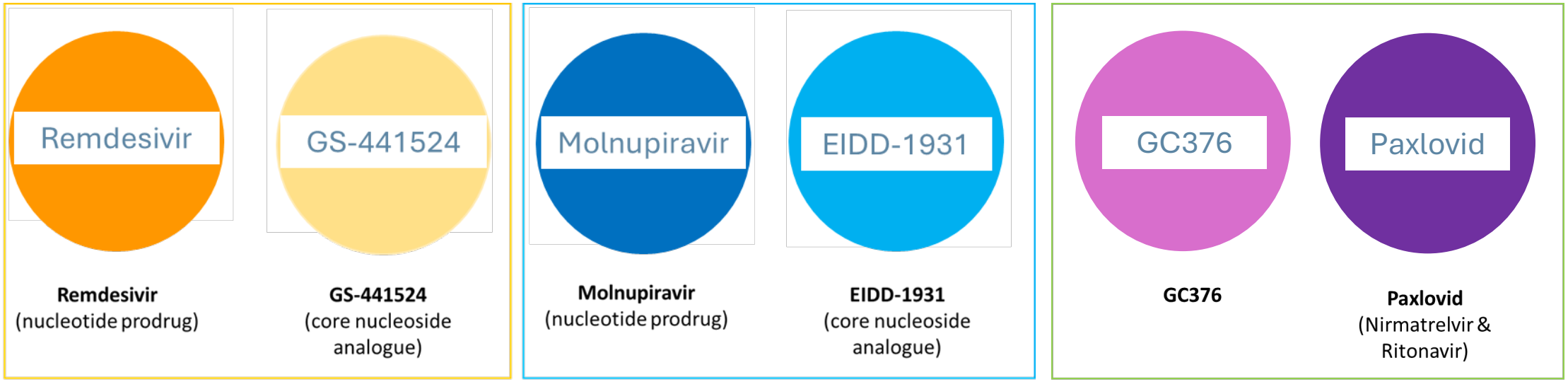
**Compounded**
Tablets, suspension, capsules & SQ injectable

**Compounded**
Tablets, suspension

**Compounded**
Tablets
(Via BOVA UK)

**Off-label Prescription**
Tablets (Paxlovid)

# What are we using to treat FIP?

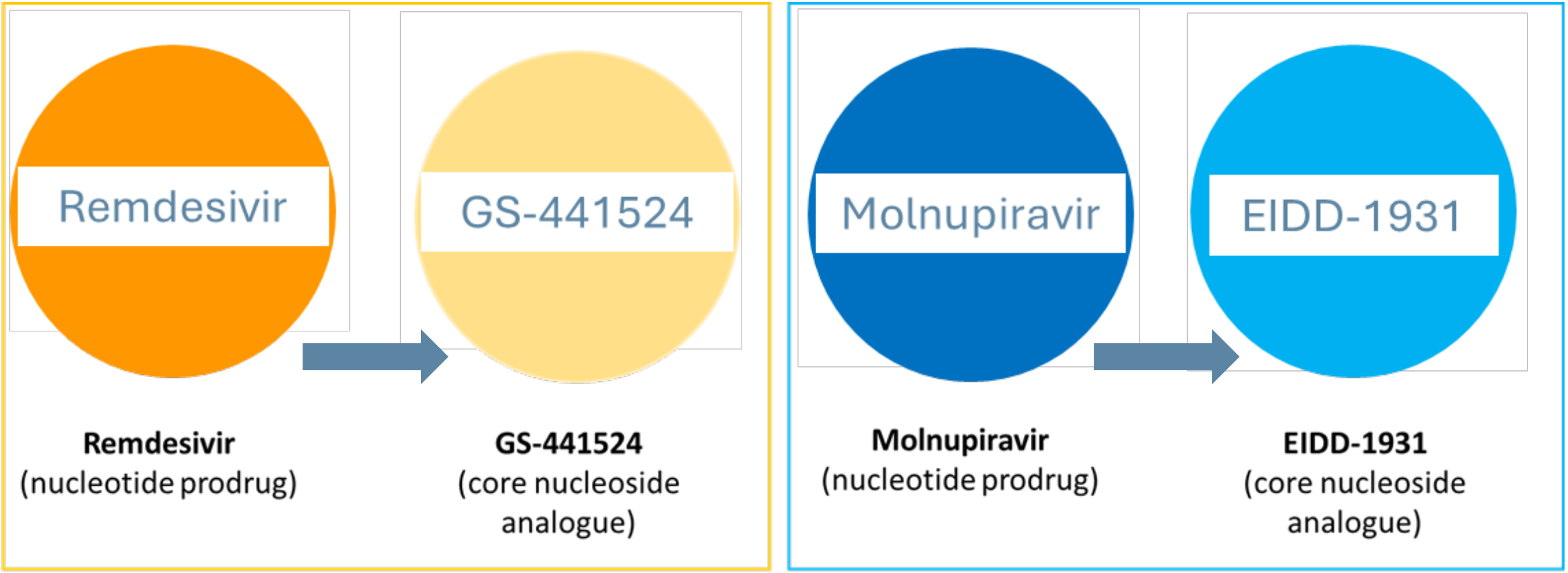



- Most studied
- Safest
- First-line Antiviral

- Less studied
- More side-effects
- Second-line Antiviral

- Least studied
- Not as effective solo
- Second-line in Combo

# How do these drugs work?



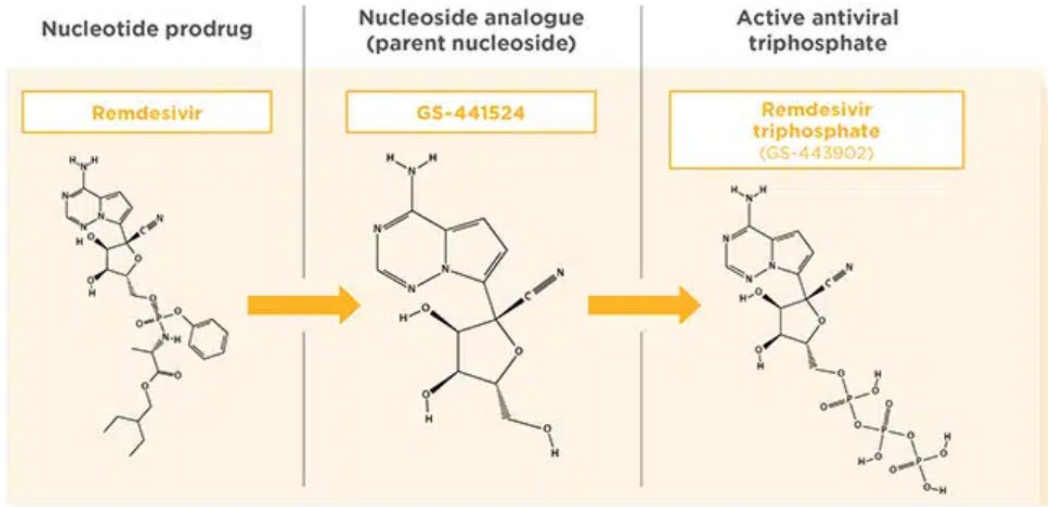

**Remdesivir**
(nucleotide prodrug)

**GS-441524**
(core nucleoside analogue)

**Molnupiravir**
(nucleotide prodrug)

**EIDD-1931**
(core nucleoside analogue)

# Prodrugs are metabolized to core nucleosides



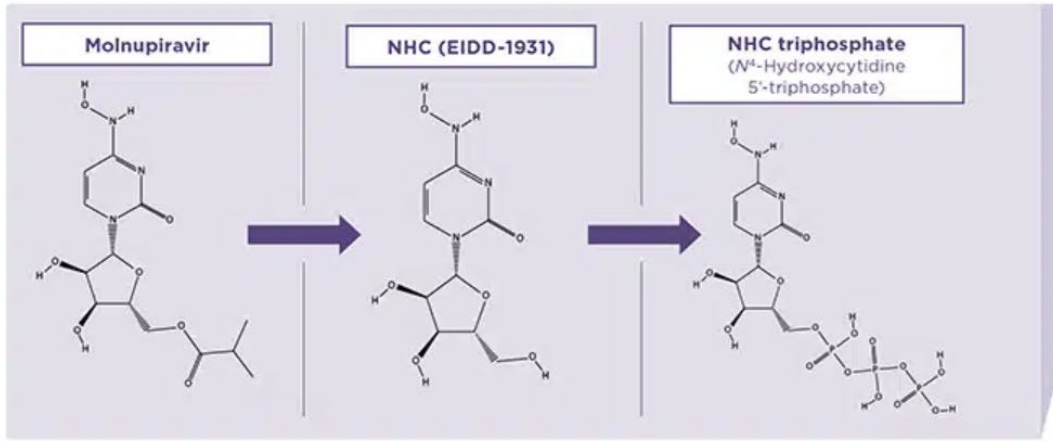

PEER REVIEWED

INFECTIOUS DISEASE PHARMACOLOGY

## Pharmacologic Approaches to Feline Infectious Peritonitis

Treatment for FIP has undergone a revolutionary transformation; antiviral therapies now offer improved survival rates among cats with a condition once considered a death sentence.

June 20, 2025 | Issue: July/August 2025



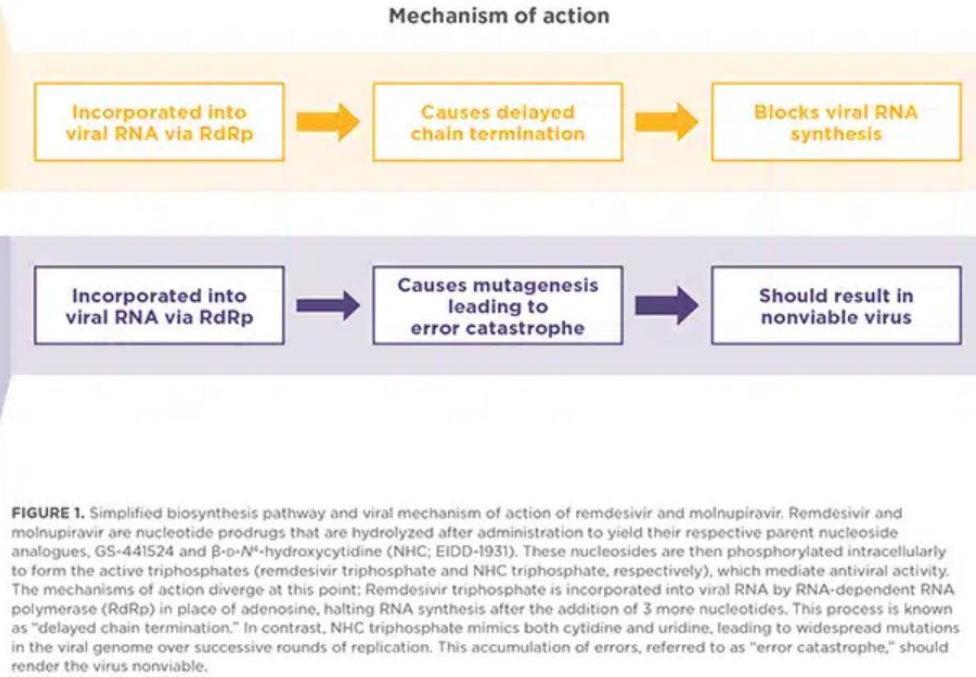
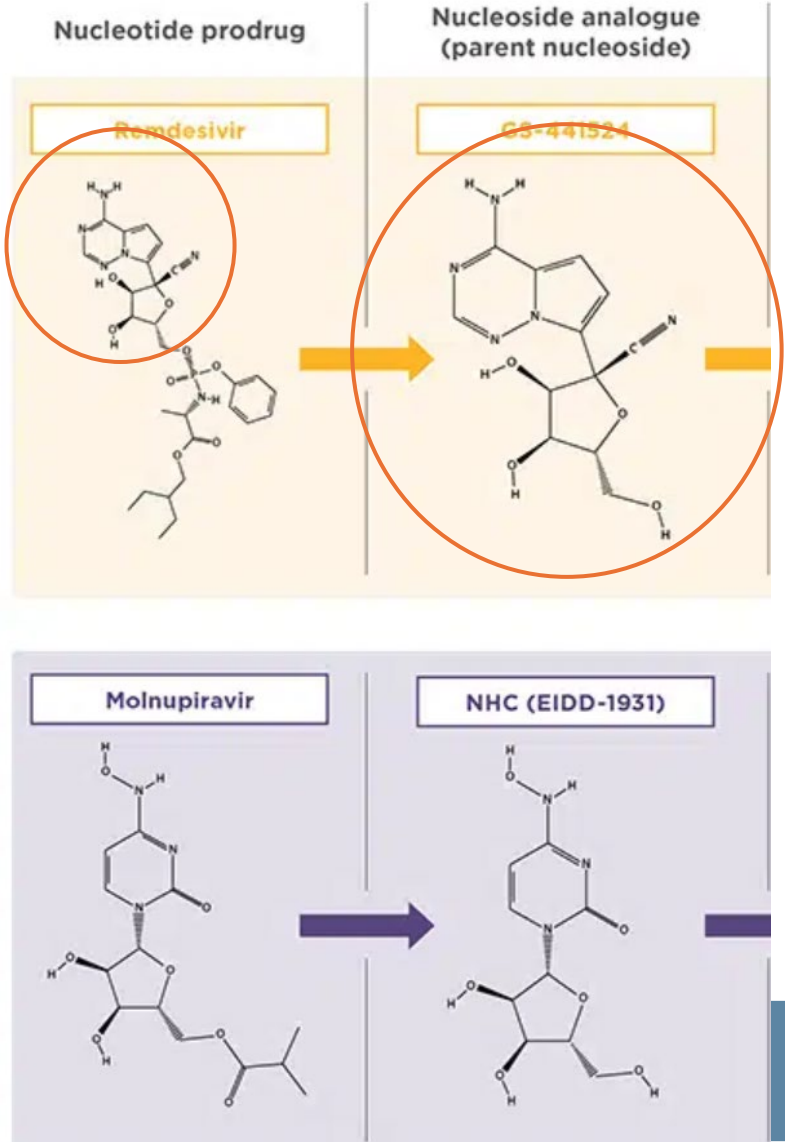




**FIGURE 1.** Simplified biosynthesis pathway and viral mechanism of action of remdesivir and molnupiravir. Remdesivir and molnupiravir are nucleotide prodrugs that are hydrolyzed after administration to yield their respective parent nucleoside analogues, GS-441524 and β-D-$N^4$-hydroxycytidine (NHC; EIDD-1931). These nucleosides are then phosphorylated intracellularly to form the active triphosphates (remdesivir triphosphate and NHC triphosphate, respectively), which mediate antiviral activity. The mechanisms of action diverge at this point: Remdesivir triphosphate is incorporated into viral RNA by RNA-dependent RNA polymerase (RdRp) in place of adenosine, halting RNA synthesis after the addition of 3 more nucleotides. This process is known as "delayed chain termination." In contrast, NHC triphosphate mimics both cytidine and uridine, leading to widespread mutations in the viral genome over successive rounds of replication. This accumulation of errors, referred to as "error catastrophe," should render the virus nonviable.

# Prodrugs are metabolized to core nucleosides



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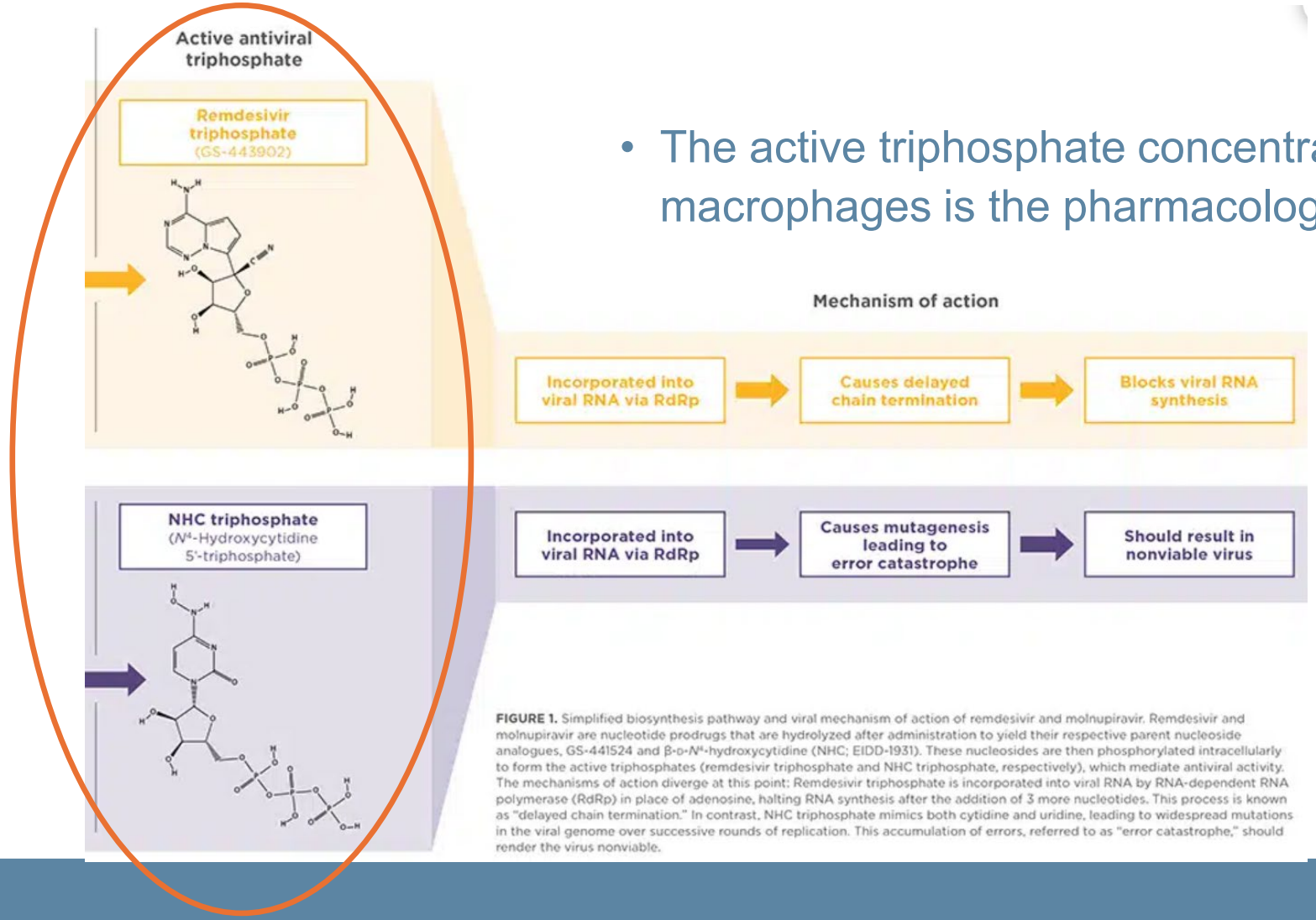


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- The active triphosphate concentration inside macrophages is the pharmacologically active part

# Viral Replication

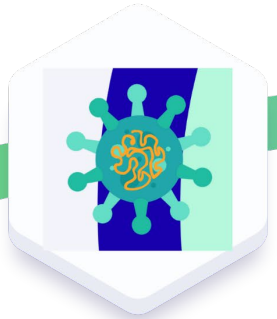
Key steps involved in FCoV replication

1

**Adhesion**

Virions bind to host cell receptors

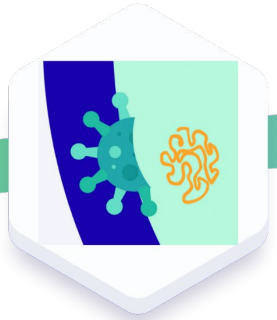
2



**Fusion**

Virion fuses with the cell wall, (or is engulfed via endocytosis)

3



**Uncoating**

Viral mRNA is released

4

**Translation**

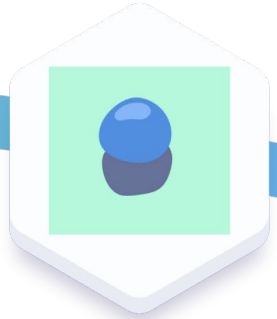
Host ribosome translates viral RNA into 2 large polyproteins

5

**Cleavage**

Viral protease enzymes cleave polyproteins

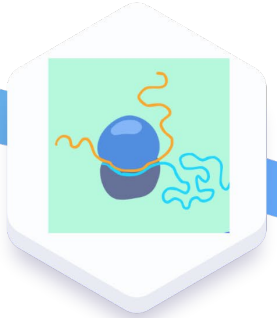
6



**RTC Assembly**

Cleaved proteins are assembled into Replication and Transcription Complexes (RTC)

7



**Transcription**

RTC makes new viral mRNA

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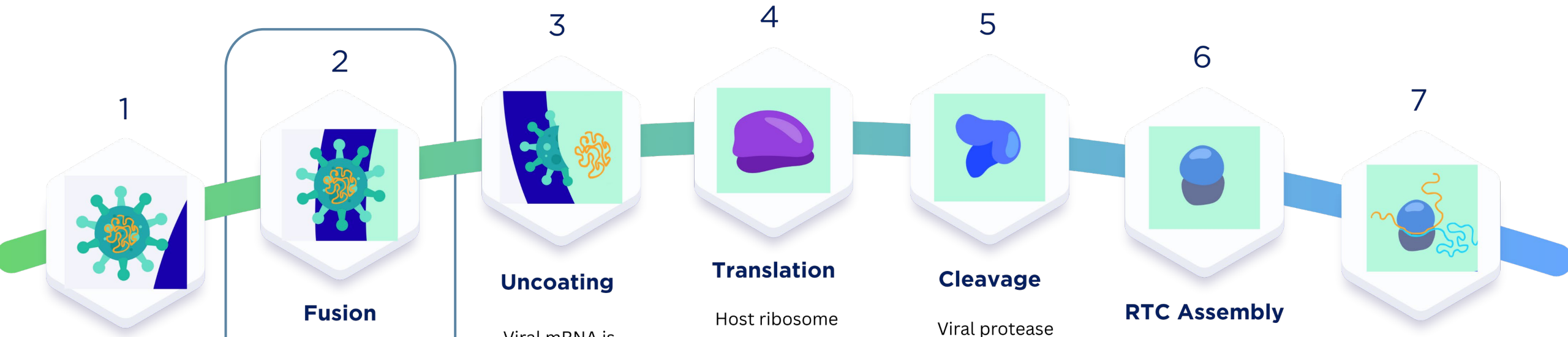
Key steps involved in FCoV replication



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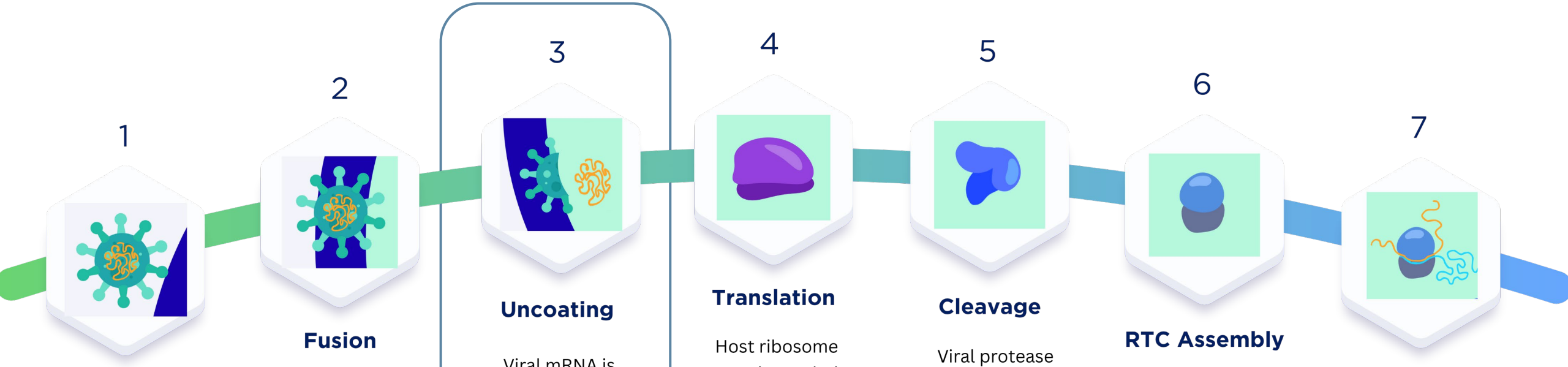

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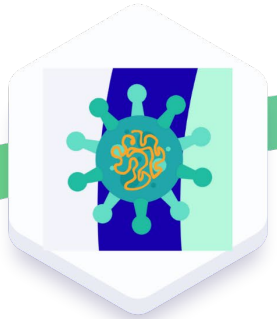

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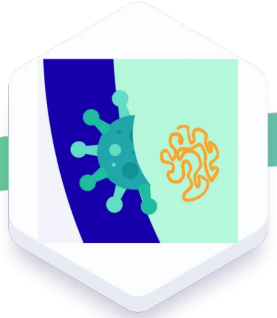

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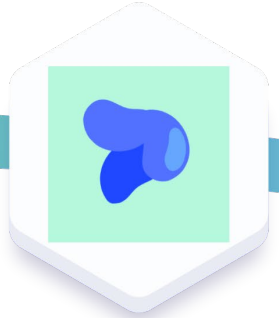

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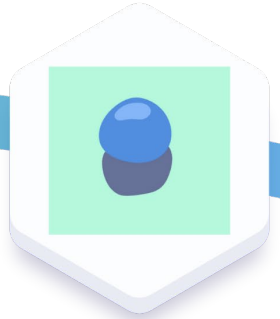

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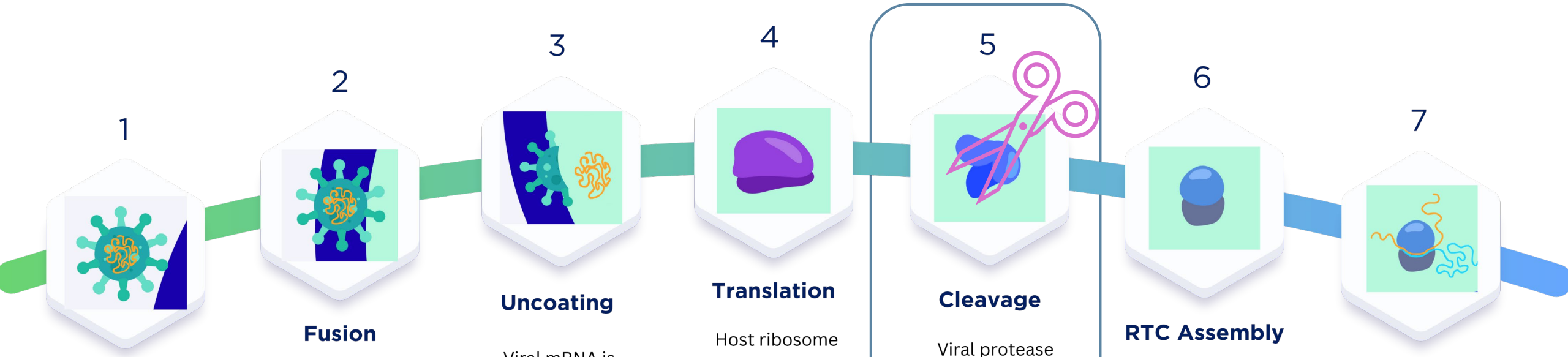
Key steps involved in FCoV replication



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GC376

**GC376**

Paxlovid

**Paxlovid** (Nirmatrelvir & Ritonavir)

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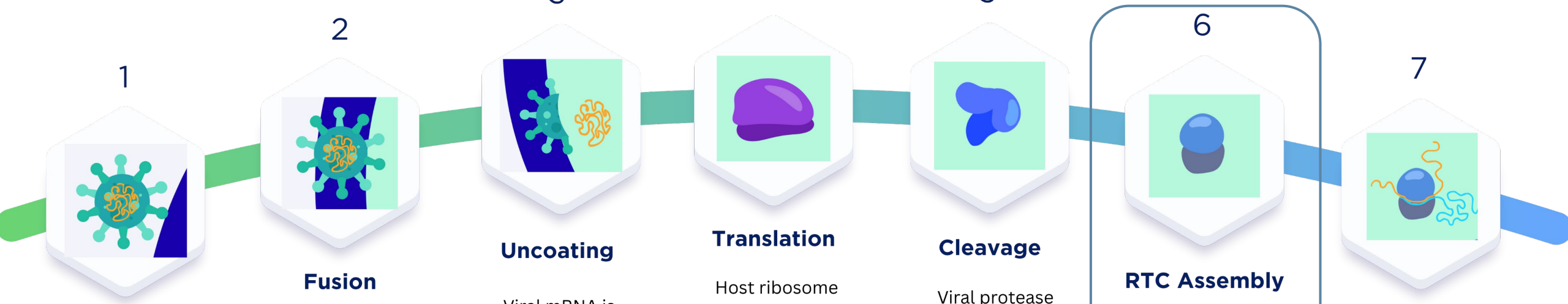

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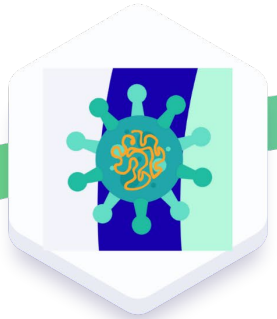

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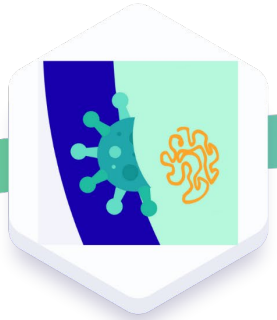

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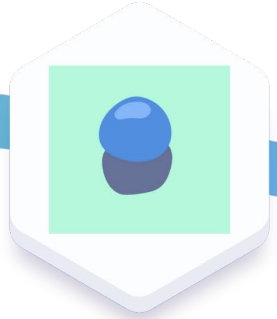

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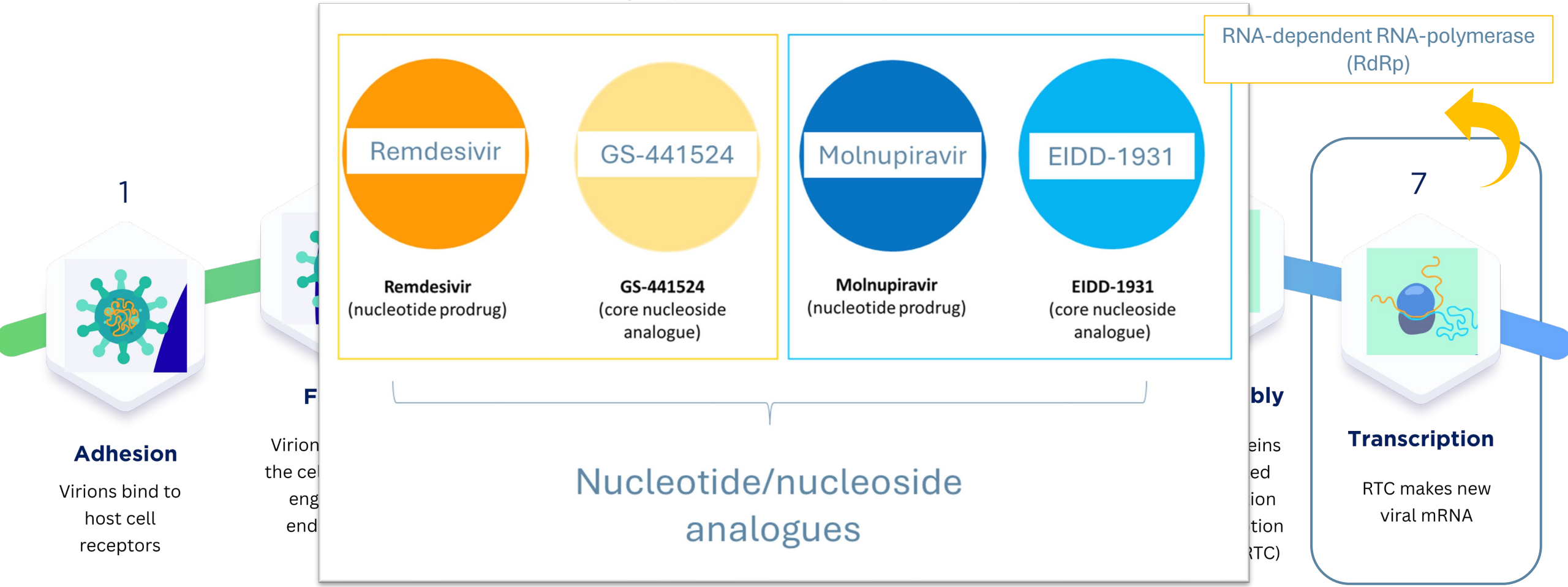

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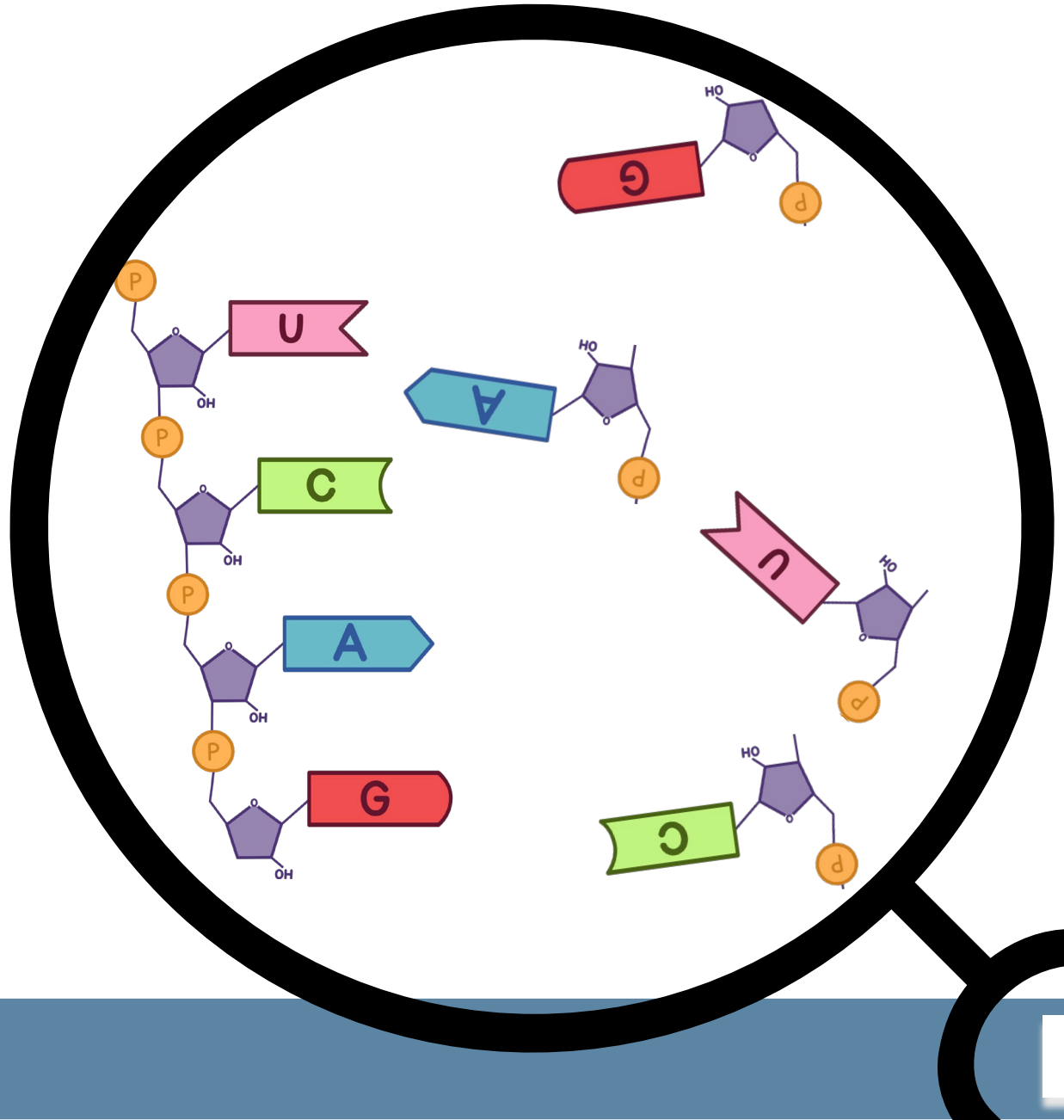

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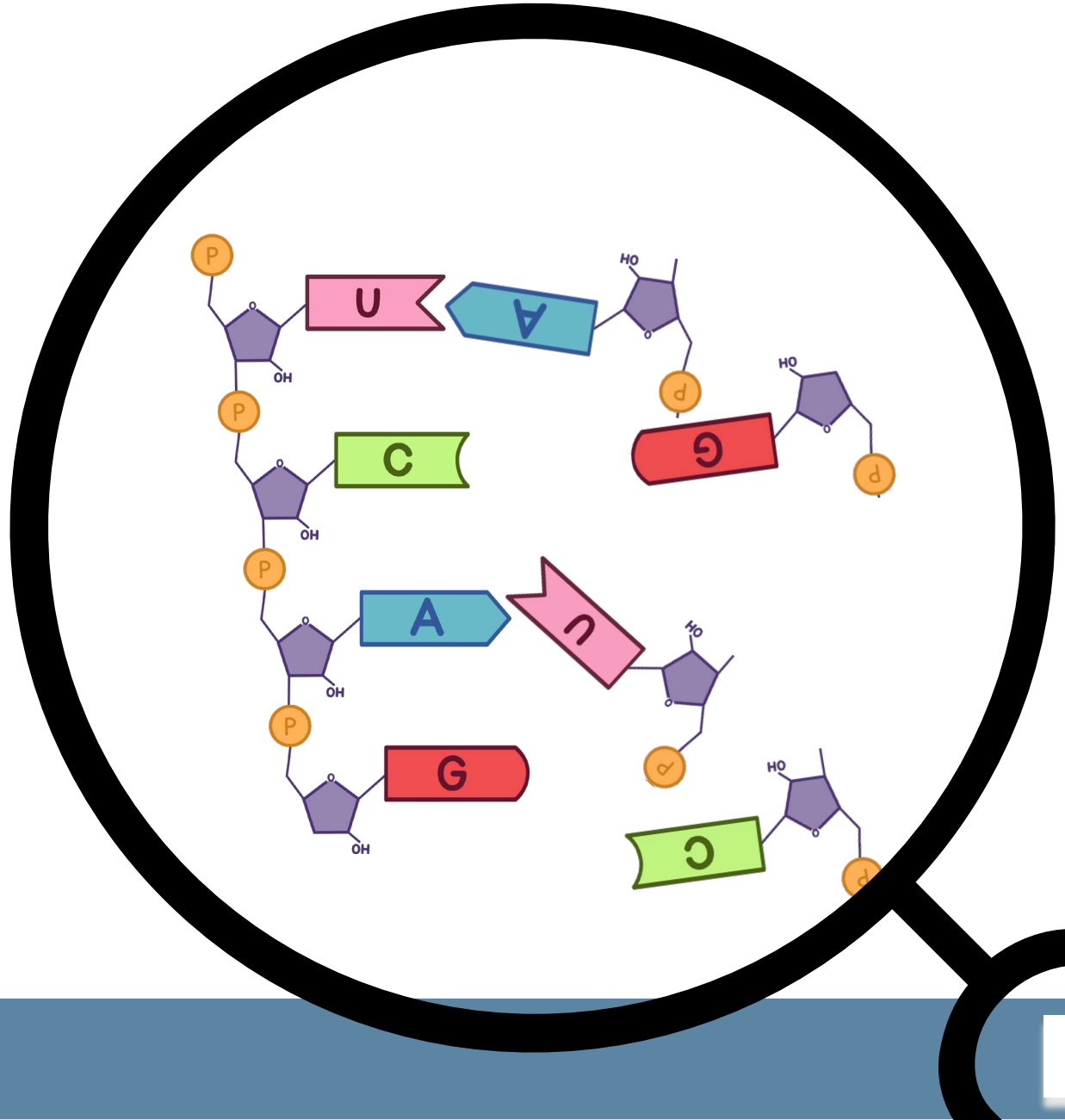

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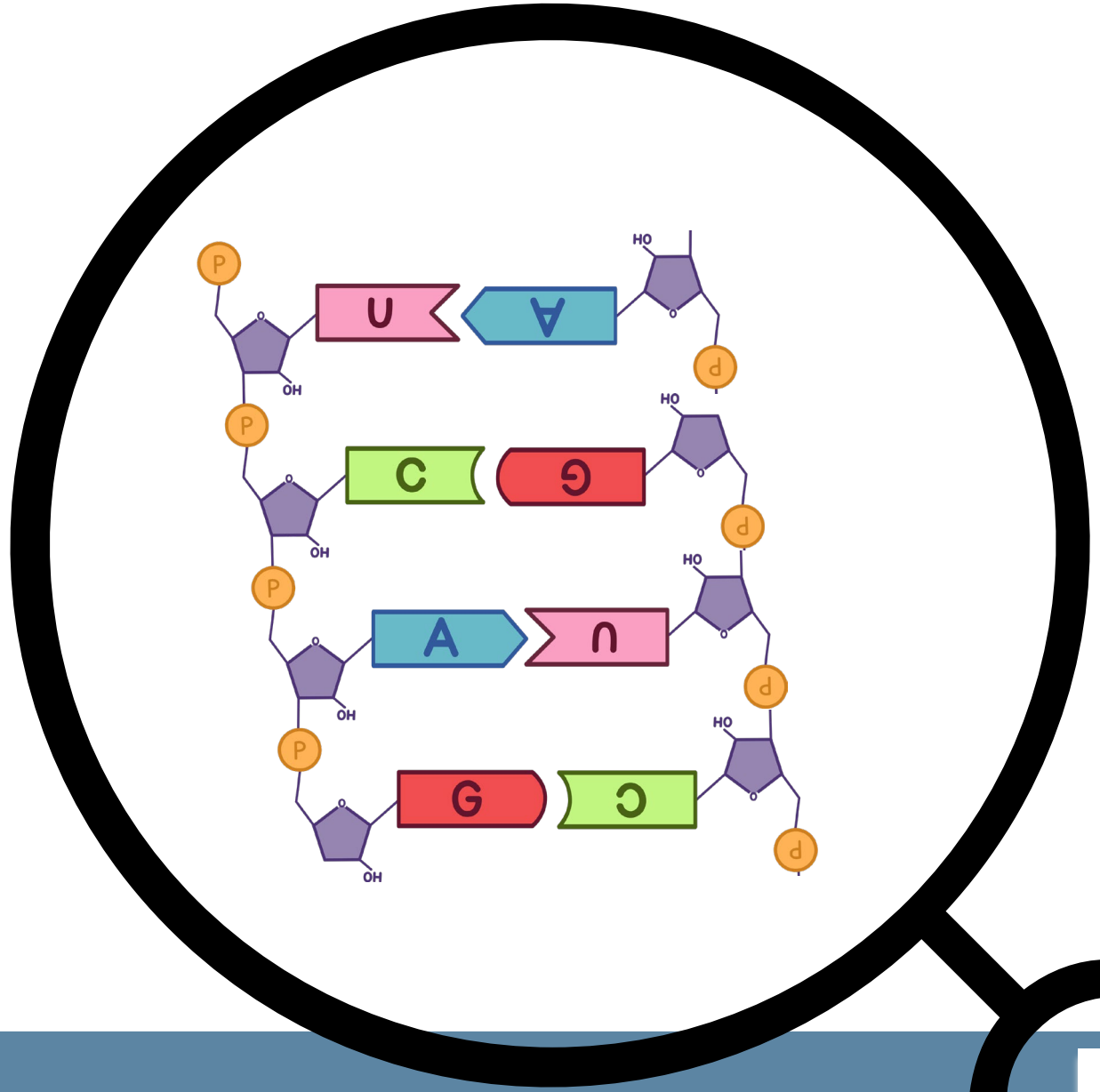

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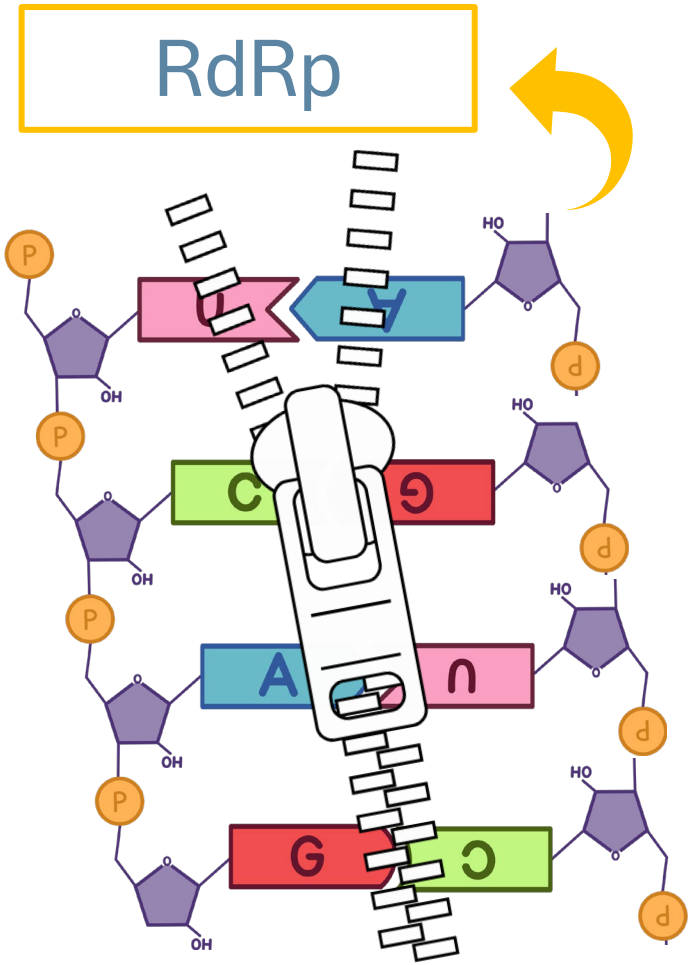
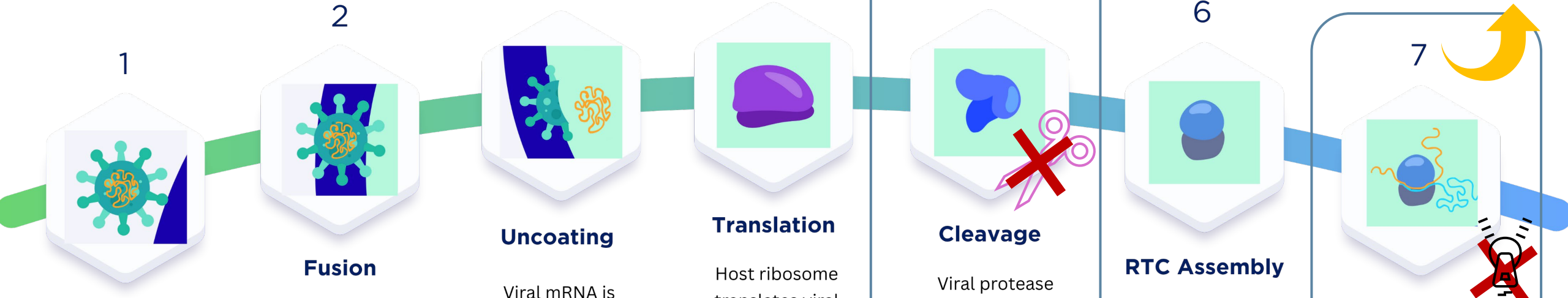


# Viral Replication

Key steps involved in FCoV replication

Protease Inhibitors

Nucleoside analogues



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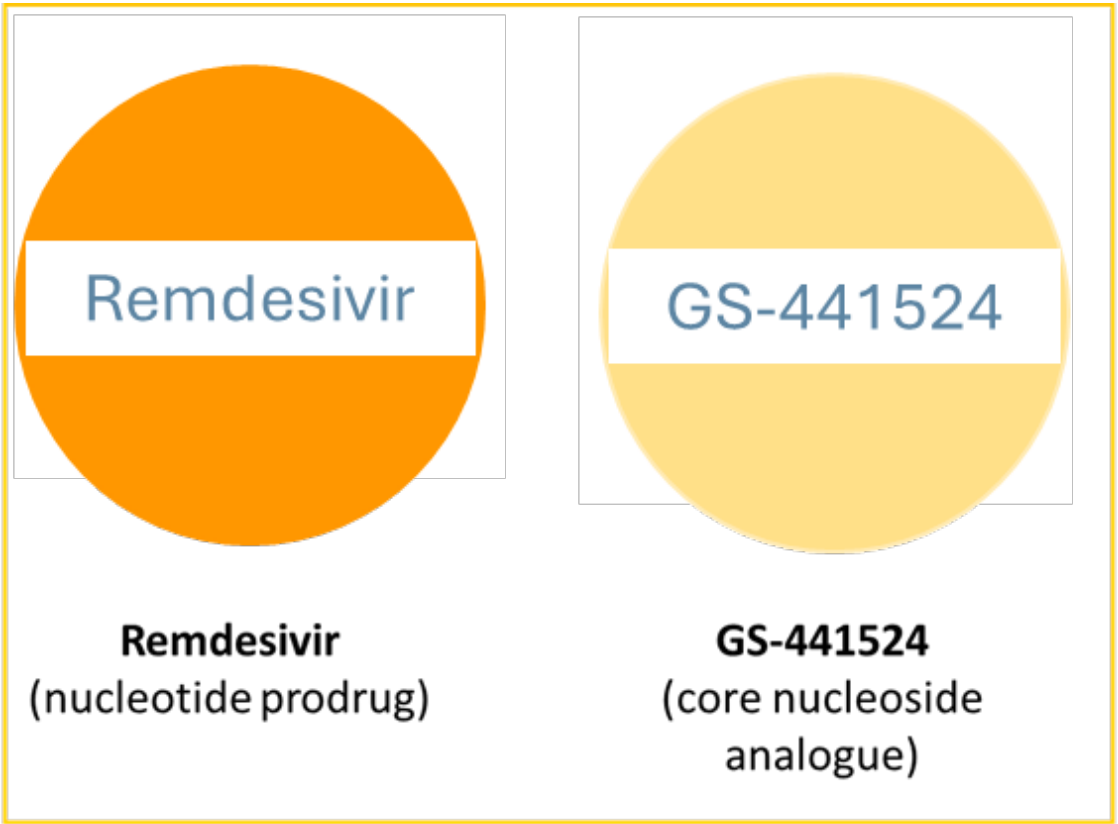


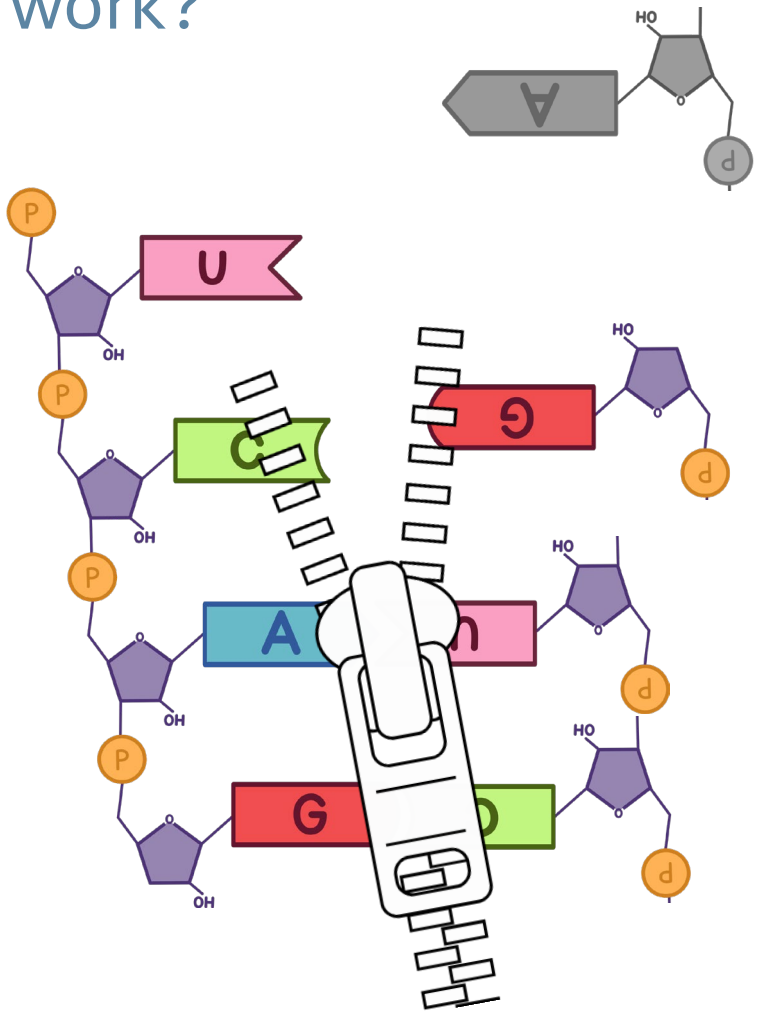

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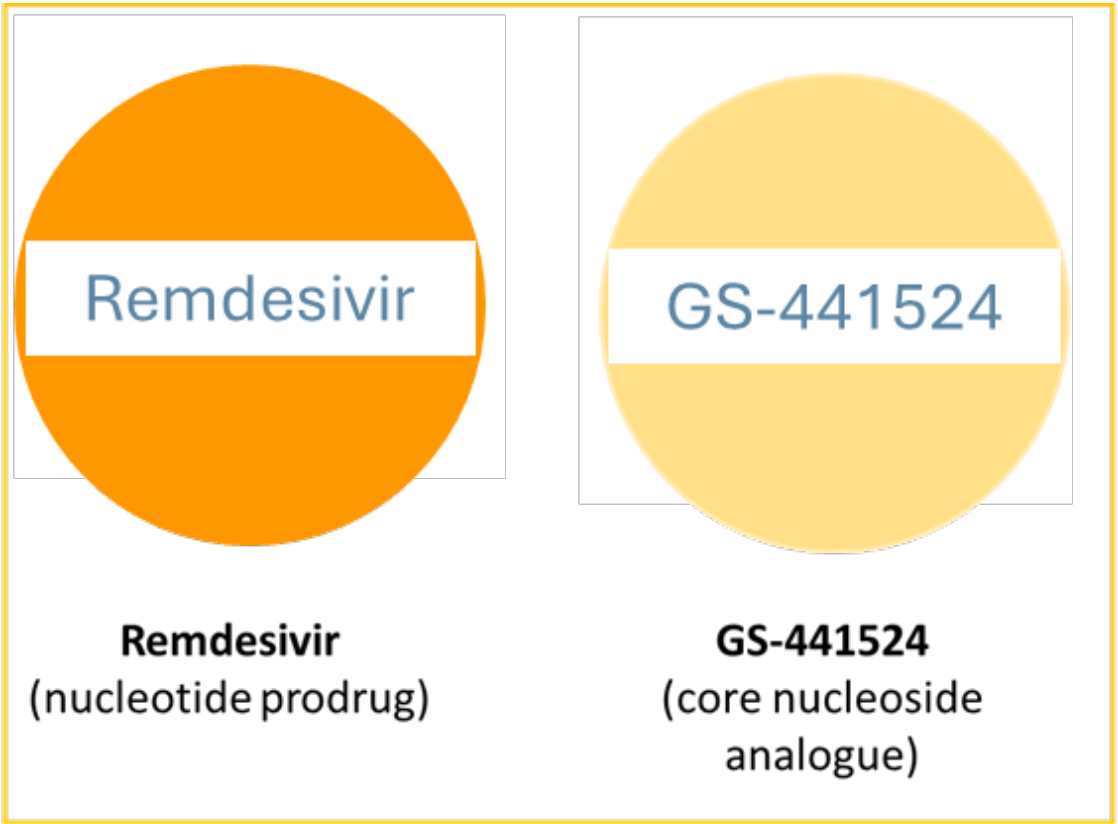


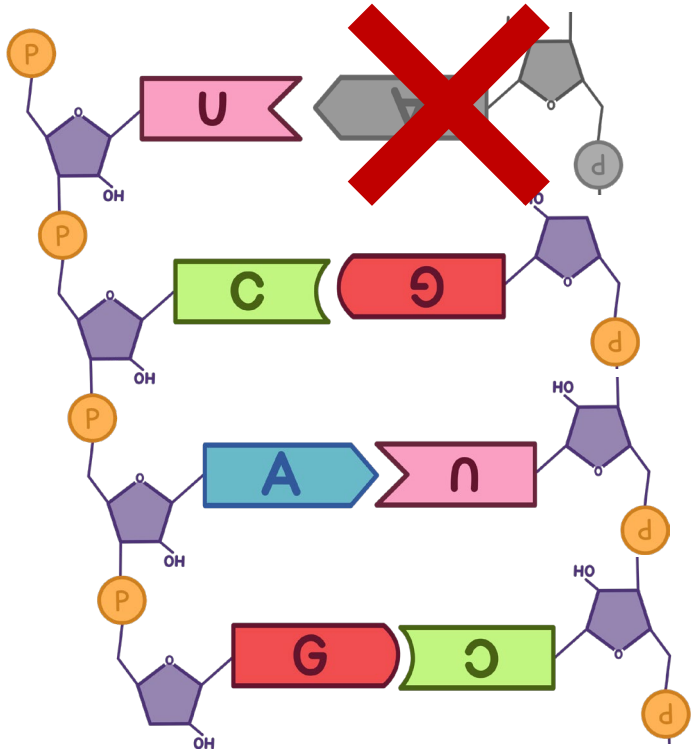


"Delayed Chain Terminators"

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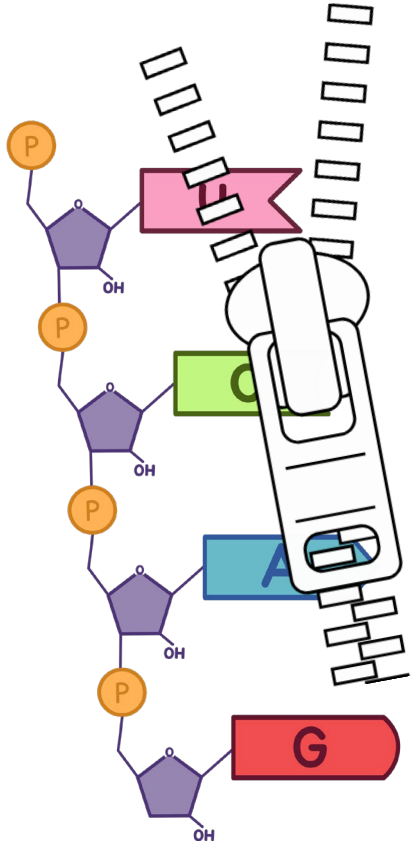
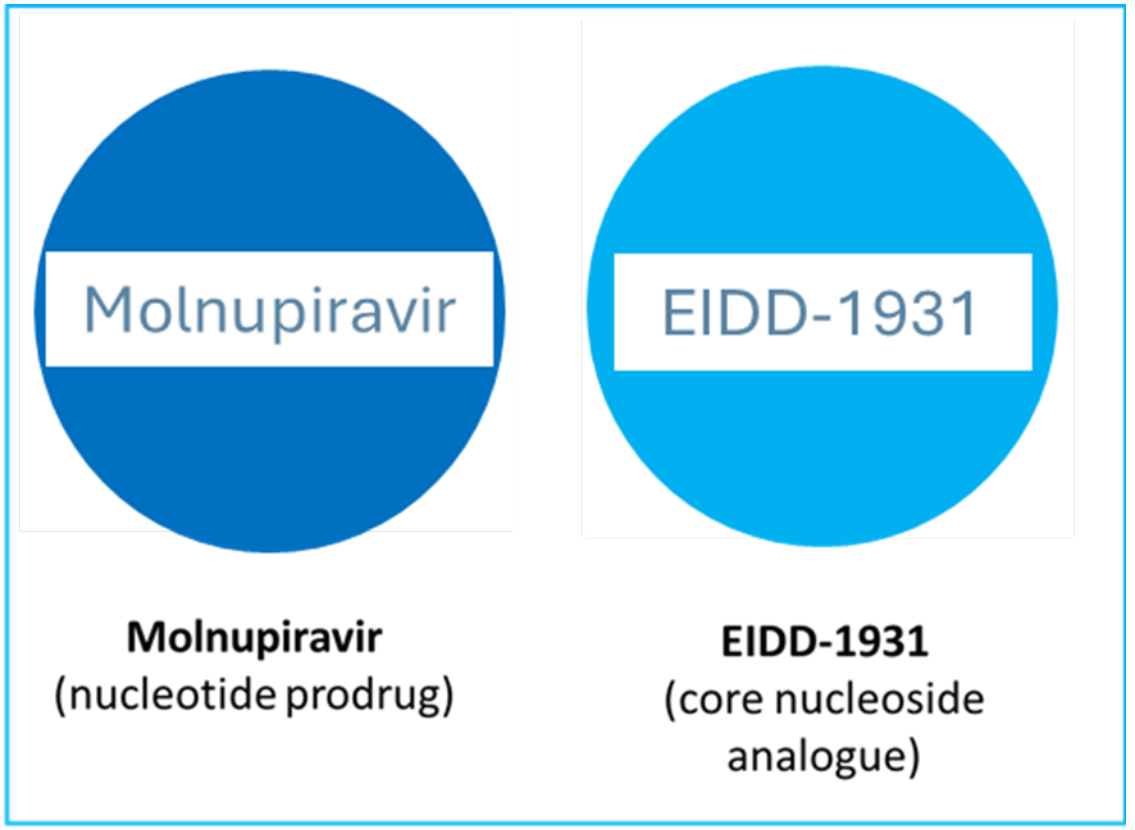



First round synthesis



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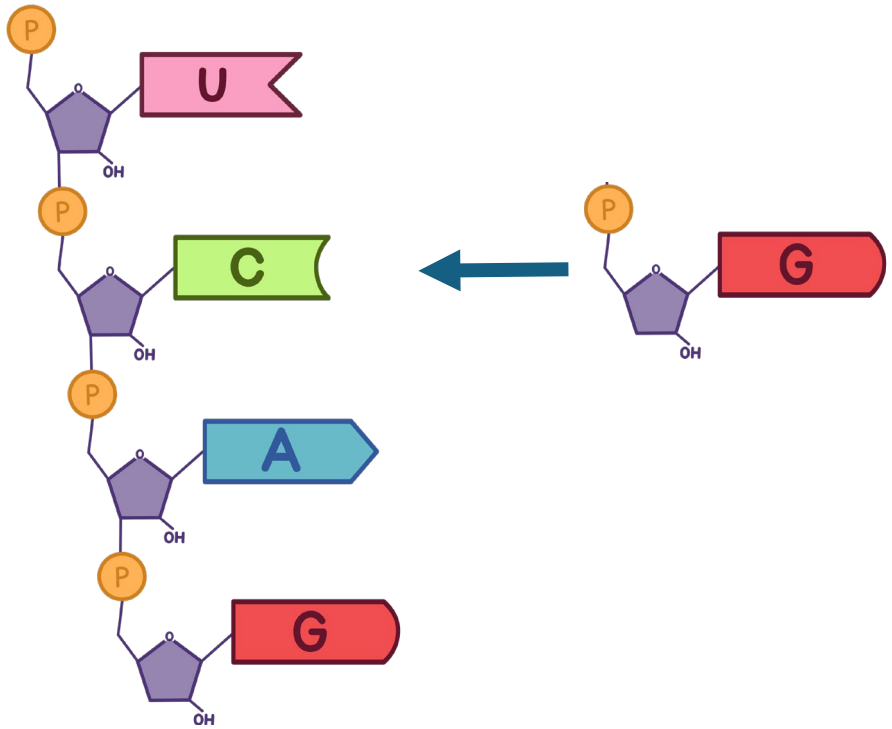
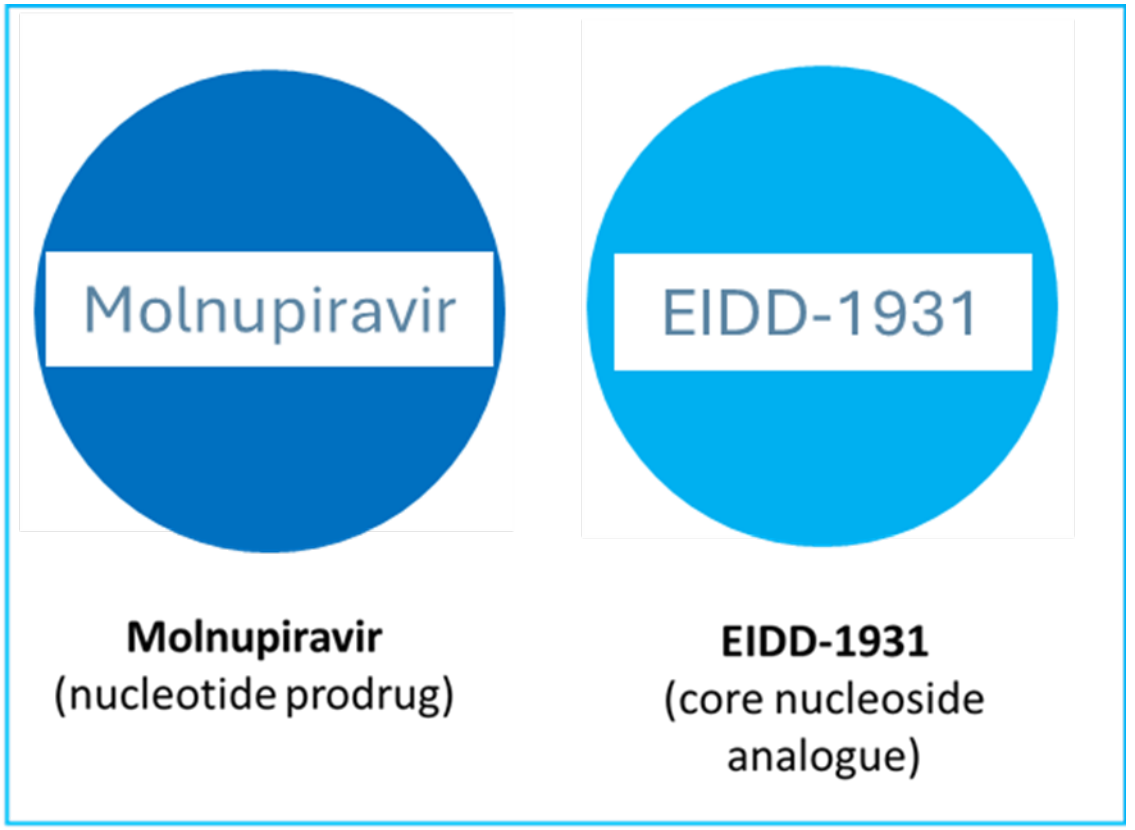
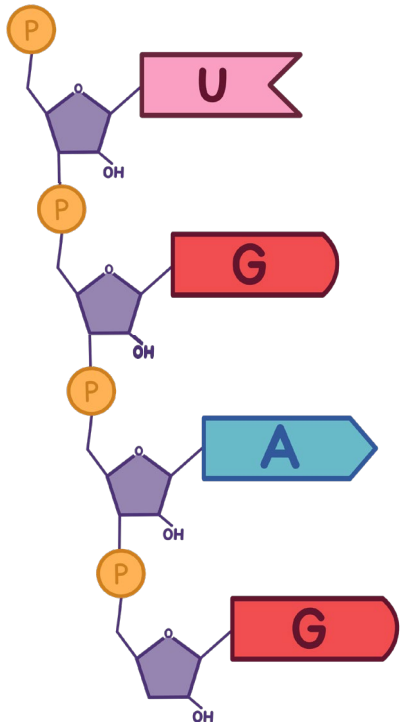



First round synthesis



# How do these drugs work?

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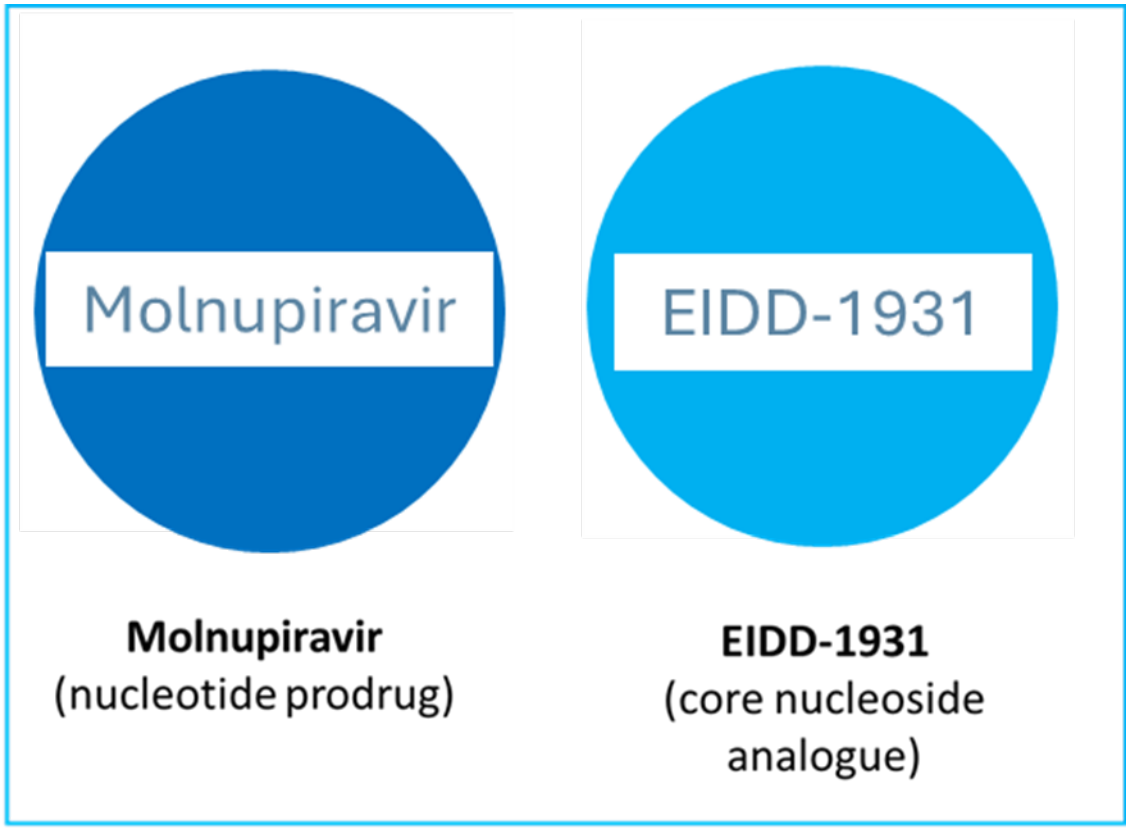

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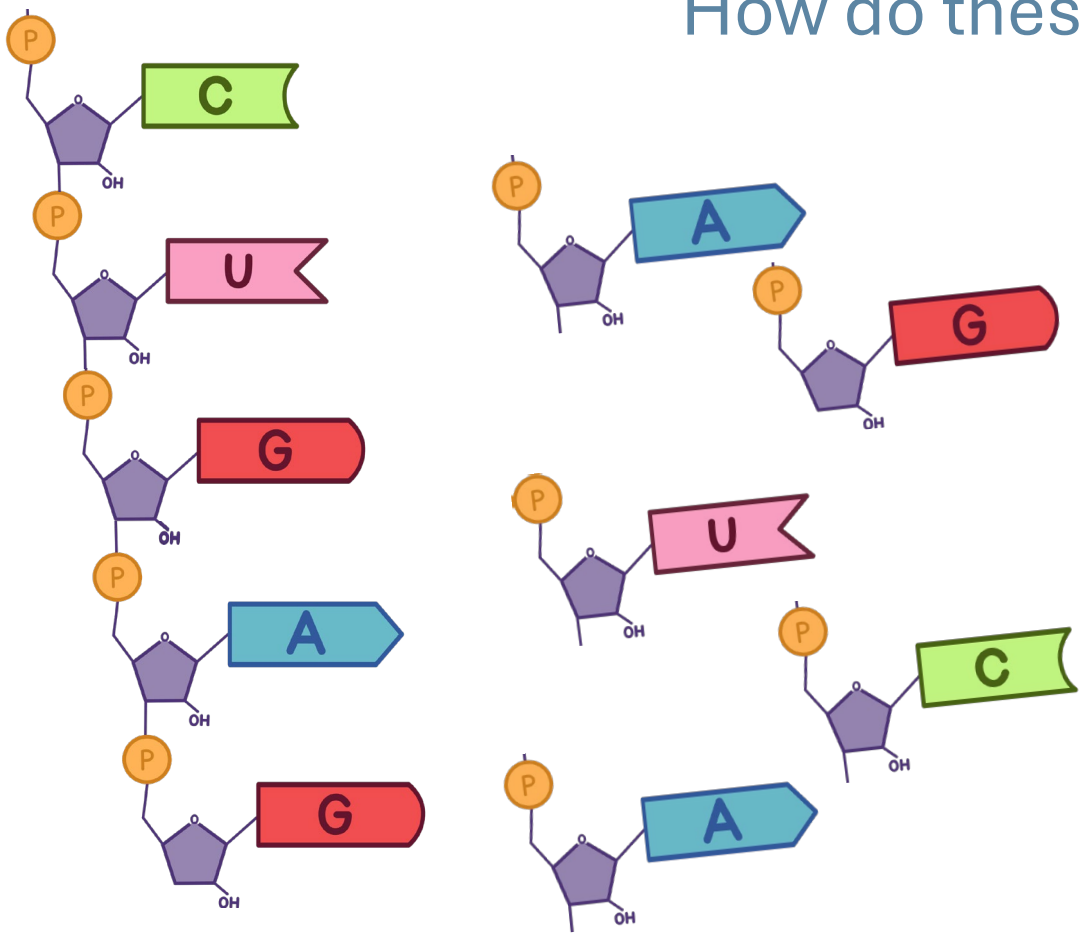


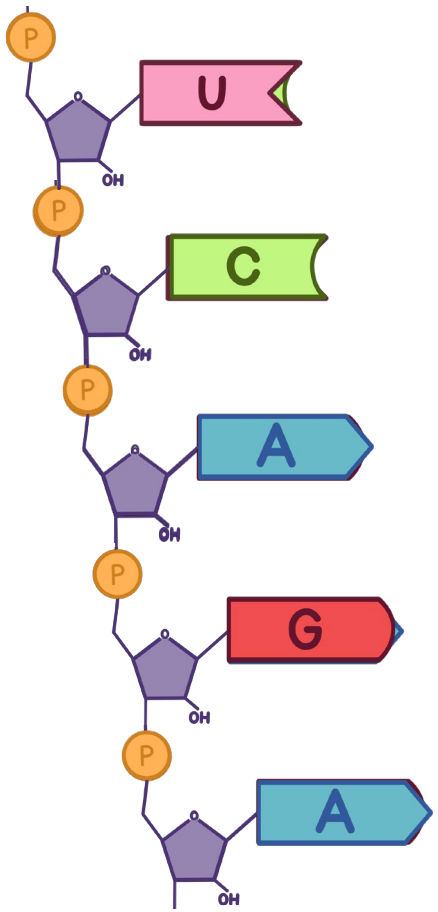


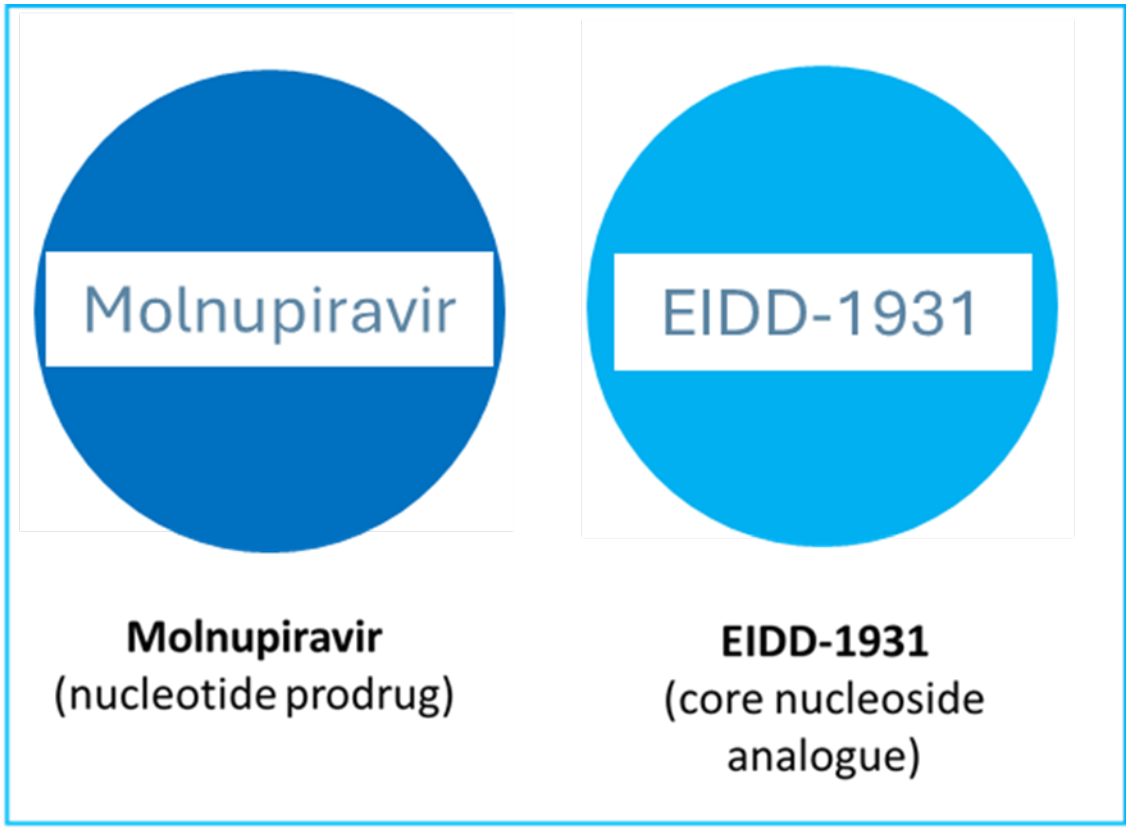

**Molnupiravir**
(nucleotide prodrug)

**EIDD-1931**
(core nucleoside analogue)

Second round synthesis

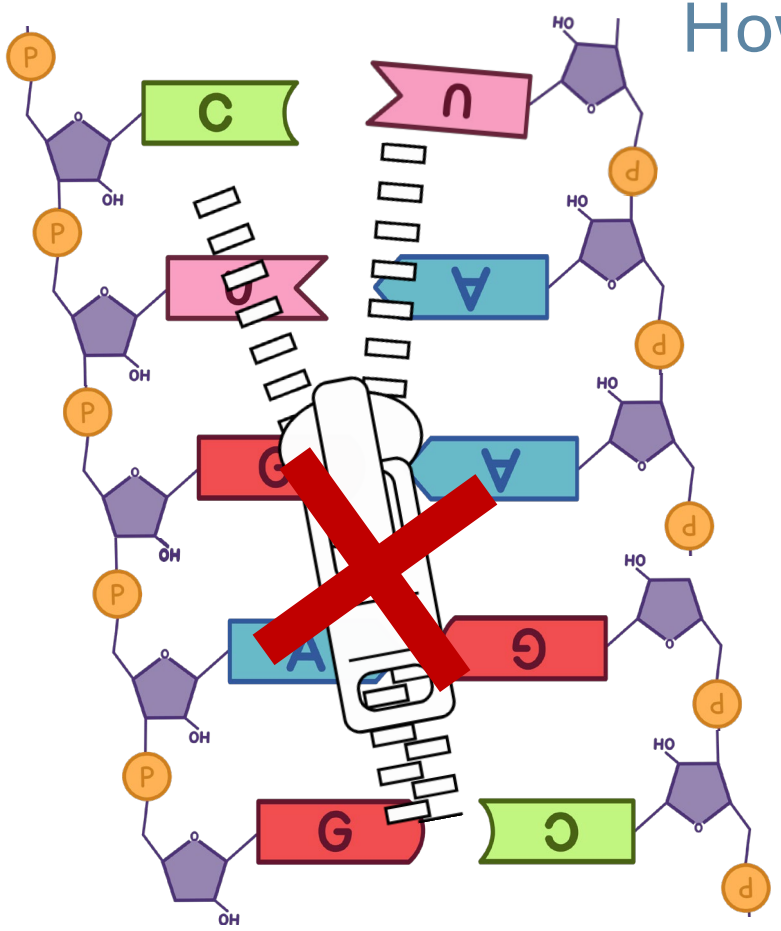
# How do these drugs work?



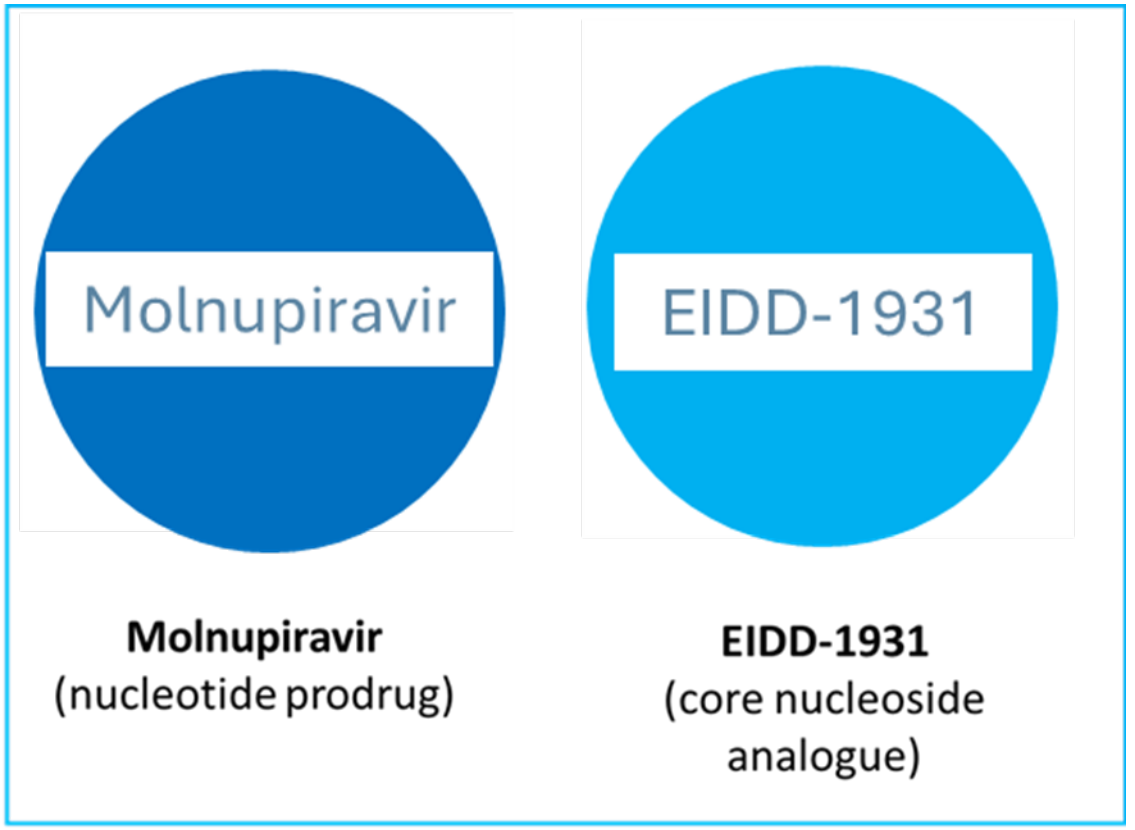




## Second round synthesis

# How do these drugs work?

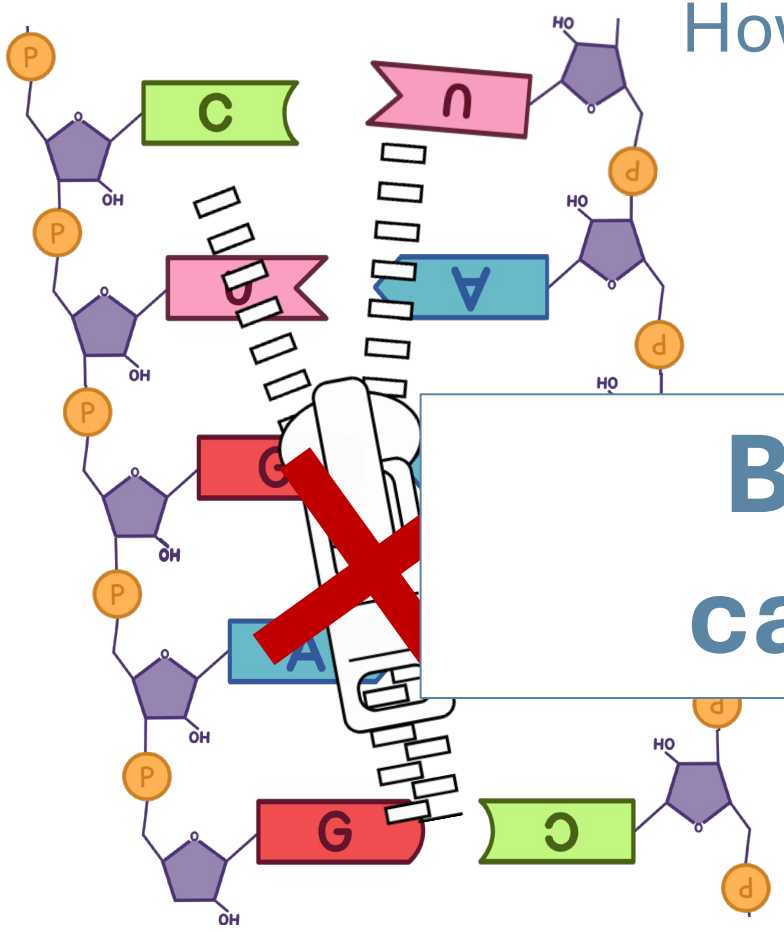


Third, Forth, Fifth round…

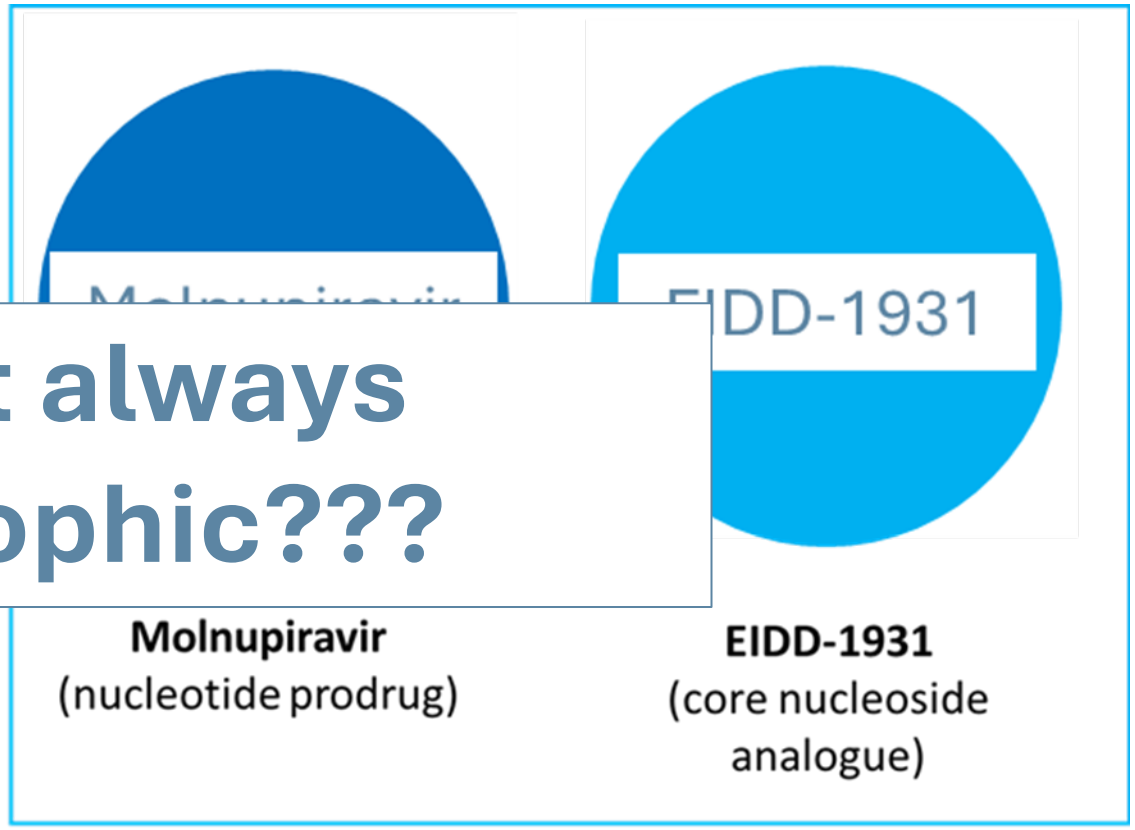



"Error Catastrophe"

How do these drugs work?




**But is it always catastrophic???**




Third, Forth, Fifth round…

“Error Catastrophe”

# Mechanism of Action for MPV/EIDD-1931

Nature. 2023 Nov;623(7987):594-600. doi: 10.1038/s41586-023-06649-6. Epub 2023 Sep 25.

## A molnupiravir-associated mutational signature in global SARS-CoV-2 genomes

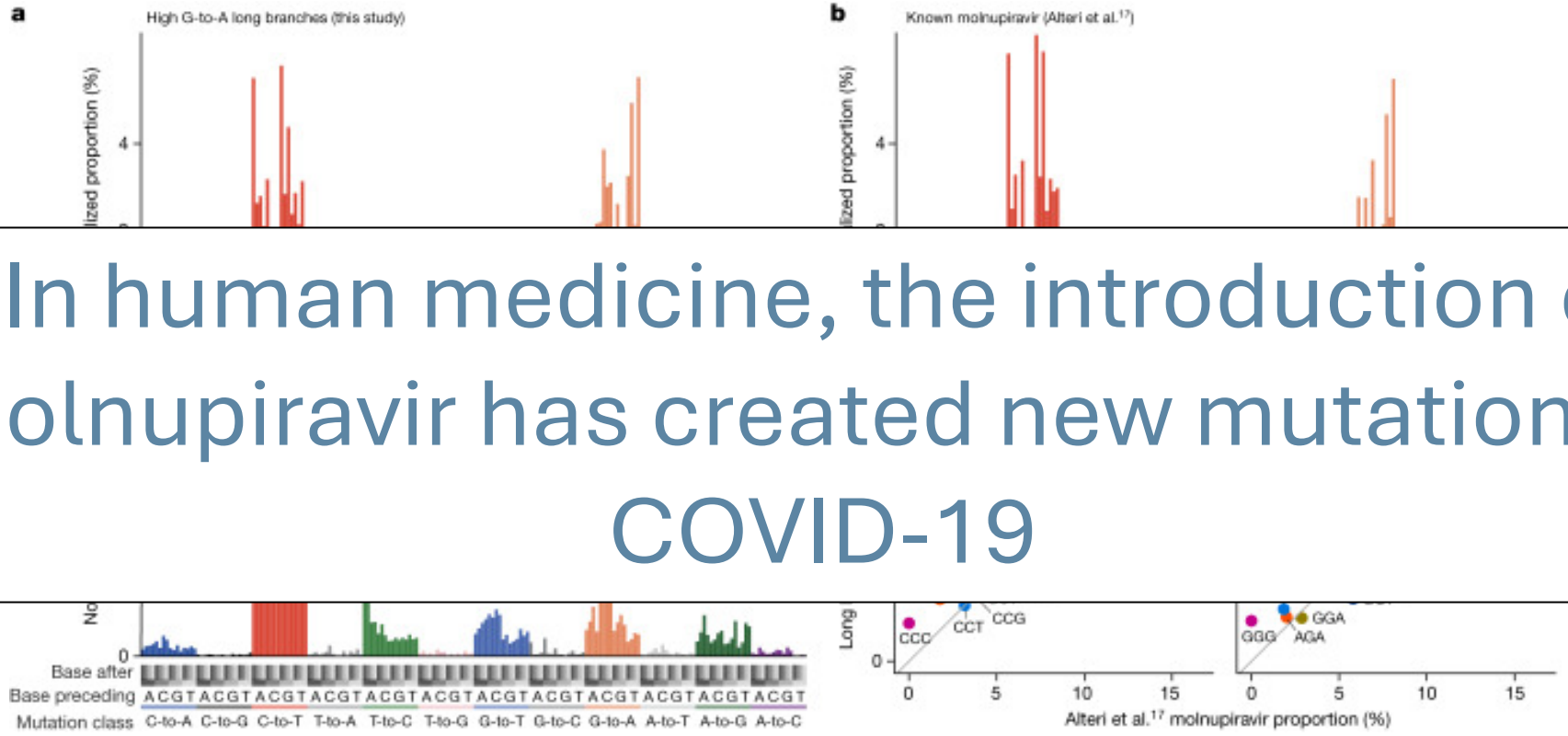
Theo Sanderson [1], Ryan Hisner [2], I'ah Donovan-Banfield [3 4], Hassan Hartman [5], Alessandra Løchen [5], Thomas P Peacock [6 7], Christopher Ruis [8 9 10 11]

Affiliations + expand

PMID: 37748513 PMCID: PMC10651478 DOI: 10.1038/s41586-023-06649-6

Analysis of SARS-CoV-2 genomes suggest molnupiravir-associated mutational signatures now exist globally following the introduction of MPV for COVID treatment

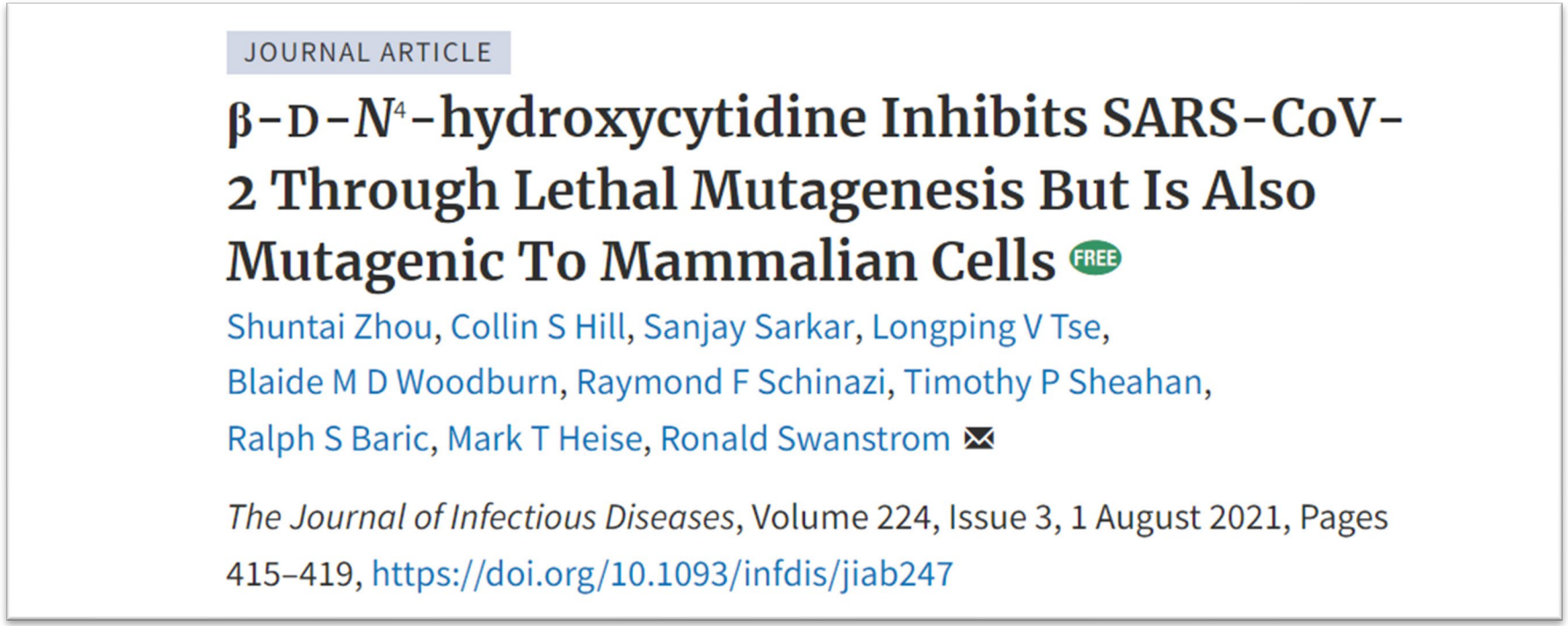
# Mechanism of Action for MPV/EIDD-1931




In human medicine, the introduction of molnupiravir has created new mutations in COVID-19

Mutation spectrum analysis supports high G-to-A branches being driven by MPV

# Mechanism of Action for MPV/EIDD-1931



JOURNAL ARTICLE

## β-D-$N^4$-hydroxycytidine Inhibits SARS-CoV-2 Through Lethal Mutagenesis But Is Also Mutagenic To Mammalian Cells FREE

Shuntai Zhou, Collin S Hill, Sanjay Sarkar, Longping V Tse, Blaide M D Woodburn, Raymond F Schinazi, Timothy P Sheahan, Ralph S Baric, Mark T Heise, Ronald Swanstrom ✉

*The Journal of Infectious Diseases*, Volume 224, Issue 3, 1 August 2021, Pages 415–419, https://doi.org/10.1093/infdis/jiab247

MPV/EIDD-1931 is intrinsically mutagenic for human RNA and DNA

# Mechanism of Action for MPV/EIDD-1931

## Human safety with Molnupiravir

- Not recommended in patients under 18 years of age
- Not recommended during pregnancy (embryofetal lethality & teratogenicity in rats, reduced foetal body weights in rabbits)
- Staff /clients should wear gloves if subdividing capsules
- Do not handle if pregnant

Safety in developing kittens???

# Treatment Outcomes with compounded RDV/GS

Retrospective study

Received: 24 November 2022 | Accepted: 27 June 2023
DOI: 10.1111/jvim.16804

STANDARD ARTICLE

Journal of Veterinary Internal Medicine Open Access ACVIM American College of Veterinary Internal Medicine

## Thirty-two cats with effusive or non-effusive feline infectious peritonitis treated with a combination of remdesivir and GS-441524

Jodie Green | Harriet Syme | Sarah Tayler

81.3%

Prospective randomized

Randomized Controlled Trial > Viruses. 2024 Jul 16;16(7):1144. doi: 10.3390/v16071144.

## Short Treatment of 42 Days with Oral GS-441524 Results in Equal Efficacy as the Recommended 84-Day Treatment in Cats Suffering from Feline Infectious Peritonitis with Effusion-A Prospective Randomized Controlled Study

Anna-M Zuzzi-Krebitz [1], Katharina Buchta [1], Michèle Bergmann [1], Daniela Krentz [1], Katharina Zwicklbauer [1], Roswitha Dorsch [1], Gerhard Wess [1], Andrea Fischer [1], Kaspar [illegible] Anne Hönl [1,2], Sonja Fiedler [2], Laura Kolberg [3], Regina Hofmann-Lehmann [4], Ma[illegible] Andrea M Spiri [4], A Katrin Helfer-Hungerbuehler [4], Sandra Felten [5], Yury Zablots[illegible] Martin Alberer [3], Ulrich von Both [3,6], Katrin Hartmann [1]

95%

Prospective study

Received: 30 October 2022 | Accepted: 27 June 2023
DOI: 10.1111/jvim.16803

STANDARD ARTICLE

Journal of Veterinary Internal Medicine Open Access ACVIM American College of Veterinary Internal Medicine

## Outcomes of treatment of cats with feline infectious peritonitis using parenterally administered remdesivir, with or without transition to orally administered GS-441524

Sally J. Coggins [1] | Jacqui M. Norris [1] | Richard Malik [2,3] | Merran Go
Evelyn J. Hall [1] | Benjamin Kimble [1] | Mary F. Thompson [1]

86%

Prospective study

Journal of Feline Medicine and Surgery
international cat care | FELINEVMA
Impact Factor: 2.1 / 5-Year Impact Factor: 2.2
Open access | Research article | First published online May 27, 2025 | Request permissions

## Efficacy of oral remdesivir in treating feline infectious peritonitis: a prospective observational study of 29 cats

Kelsey Ann Renner, Ryan Cattin, [...], and Sally Coggins +3 View all authors and affiliations

All Articles | https://doi.org/10.1177/1098612X251335189

86%

Retrospective study

Journal of Feline Medicine and Surgery
isfm
Impact Factor: 1.7 / 5-Year Impact Factor: 1.9 JOURNAL HOMEPAGE
Open access | Research article | First published online September 21, 2023

## Retrospective study and outcome of 307 cats with feline infectious peritonitis treated with legally sou[illegible] veterinary compounded preparations of remdesivir and GS-441524 (2020–2022)

Samantha S Taylor, Sally Coggins, [...], and Séverine Tasker +25 View all authors and affiliations

All Articles | https://doi.org/10.1177/1098612X231194460
Contents | PDF / ePub | Cite article | Share options | Information, rights and permissions [illegible]metrics and citations

84.4%

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# Treatment Outcomes with Unlicensed GS-441524

**Owner reported survey**

Animals (Basel). 2021 Jul 30;11(8):2257. doi: 10.3390/ani11082257.

## Unlicensed GS-441524-Like Antiviral Therapy Can Be Effective for at-Home Treatment of Feline Infectious Peritonitis

Sarah Jones [1], Wendy Novicoff [2], Julie Nadeau [3], Samantha Evans [1]

Affiliations + expand

PMID: 34438720 PMCID: PMC8388366 DOI: 10.3390/ani11082257

96%

**Mutian prospective study**

Viruses. 2021 Nov 5;13(11):2228. doi: 10.3390/v13112228.

## Curing Cats with Feline Infectious Peritonitis with an Oral Multi-Component Drug Containing GS-441524

Daniela Krentz [1], Katharina Zenger [1], Martin Alberer [2], Sandra Felten [1], Michèle Bergmann [1], Roswitha Dorsch [1], Kaspar Matiasek [3], Laura Kolberg [2], Regina Hofmann-Lehmann [4], Marina L Meli [4], Andrea M Spiri [4], Jeannie Horak [5], Saskia Weber [6], Cora M Holicki [6], Martin H Groschup [6 7], Yury Zablotski [1], Eveline Lescrinier [8], Berthold Koletzko [5], Ulrich von Both [2 9], Katrin Hartmann [1]

Affiliations + expand

PMID: 34835034 PMCID: PMC8621566 DOI: 10.3390/v13112228

100%

**Mutian vs MPV non-randomised observational study**

ORIGINAL RESEARCH article
Front. Vet. Sci., 18 July 2024
Sec. Comparative and Clinical Medicine
Volume 11 - 2024 | https://doi.org/10.3389/fvets.2024.1422408

GS-441524 and molnupiravir are similarly effective for the treatment of cats with feline infectious peritonitis

Okihiro Sase[1]* Tomoko Iwami[1] Takeru Sasaki[1] Tadashi Sano[2]

81%

# Similar survival But →

J Am Vet Med Assoc. 2024 Feb 7;262(4):489-497. doi: 10.2460/javma.23.08.0466. Print 2024 Apr 1.

## Unlicensed antiviral products used for the at-home treatment of feline infectious peritonitis contain GS-441524 at significantly different amounts than advertised

Alycia M Kent [1], Su Guan [2], Nicole Jacque [3], Wendy Novicoff [4 5], Samantha J M Evans [6]

Affiliations + expand

PMID: 38324994 PMCID: PMC11983332 DOI: 10.2460/javma.23.08.0466

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# 1st-line Treatment Outcomes: Compounded & Off-label MPV

Prospective observational study

ACVIM JOURNAL OF VETERINARY INTERNAL MEDICINE Open Access

CASE REPORT | Open Access

**Molnupiravir treatment of 18 cats with feline infectious peritonitis: A case series**

Okihiro Sase

First published: 08 August 2023 | https://doi.org/10.1111/jvim.16832

77%

Prospective observational study

AUSTRALIAN VETERINARY JOURNAL — AUSTRALIA'S PREMIER VETERINARY SCIENCE TEXT

ORIGINAL ARTICLE

**Treatment of feline infectious peritonitis in cats with molnupiravir: clinical observations and outcomes for 54 cases**

TM Clark, SJ Coggins, R Korman, J King, R Malik

First published: 15 April 2025 | https://doi.org/10.1111/avj.13433 | Citations: 1

72%

Non-inferiority study

ACVIM JOURNAL OF VETERINARY INTERNAL MEDICINE Open Access

STANDARD ARTICLE | Open Access

**Open label clinical trial of orally administered molnupiravir as a first-line treatment for naturally occurring effusive feline infectious peritonitis**

Krystle L. Reagan, Terza Brostoff, Jully Pires, Amy Rose, Diego Castillo, Brian G. Murphy

First published: 26 September 2024 | https://doi.org/10.1111/jvim.17187

80%

Mutian vs MPV non-randomised observational study

ORIGINAL RESEARCH article

Front. Vet. Sci., 18 July 2024

Sec. Comparative and Clinical Medicine

Volume 11 - 2024 | https://doi.org/10.3389/fvets.2024.1422408

GS-441524 and molnupiravir are similarly effective for the treatment of cats with feline infectious peritonitis

Okihiro Sase[1*] Tomoko Iwami[1] Takeru Sasaki[1] Tadashi Sano[2]

85%

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No studies have been powered for superiority

# Can we compare outcomes?

| BOVA GS-441524/RDV | | Optimus Healthcare RDV | | Unlicensed GS-441524 | | Molnupiravir as First-line Treatment | |
|---|---|---|---|---|---|---|---|
| Coggins et al 2023 | 86% | Renner et al 2025 | 86% | Jones et al 2021 | 96% | Sase 2023 | 77% |
| Taylor et al 2023 | 84% | | | Krentz et al 2021 | 100% | Reagan et al 2024 | 80% |
| Green et al 2023 | 81% | | | Sase et al 2024 | 81% | Clark et al 2025 | 72% |
| Zuzzi-Krebitz 2024 | 95% | | | | | Sase et al 2024 | 85% |
| | | | | | | **Overall survival across all studies** | **85%** |

**Take home message:** If a cat has FIP, giving it **any of the above nucleoside analogues** will give it ~ **85% chance of survival**

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# Which drug you choose will depend on:

*Bowser*

- Which drugs are legally available where you practice
- What you can get into the cat the fastest (OK to chop and change)
- How sick the cat is at time of diagnosis (IV/SC vs PO)
- Whether the cat accepts pills or liquids best
- Side-effects (mainly an issue for MPV/EIDD-1931)
- Price

# What about Molnupiravir as 2nd-line therapy?

pathogens Oct 2022 MDPI

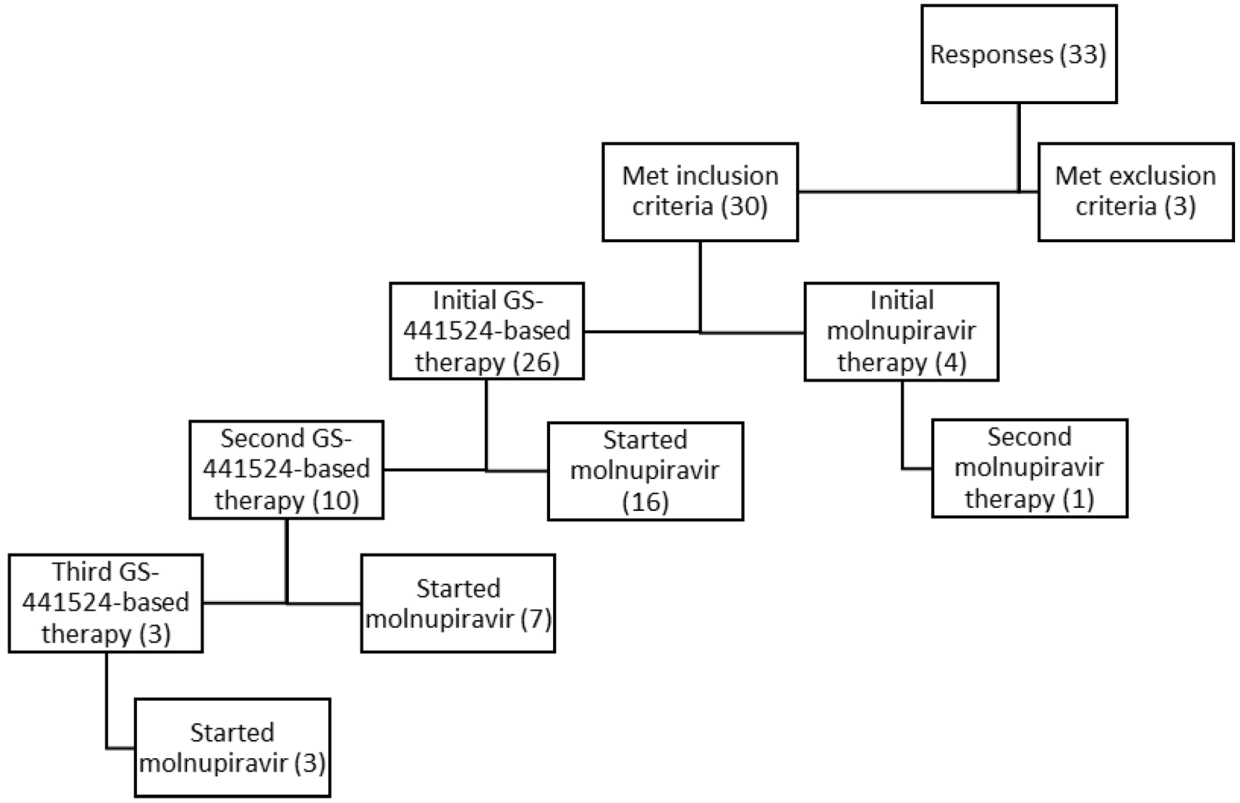
Article

**Unlicensed Molnupiravir is an Effective Rescue Treatment Following Failure of Unlicensed GS-441524-like Therapy for Cats with Suspected Feline Infectious Peritonitis**

Meagan Roy [1], Nicole Jacque [2], Wendy Novicoff [3], Emma Li [1], Rosa Negash [1] and Samantha J. M. Evans [1,*]

26 cats treated with unlicensed molnupiravir as a rescue therapy AFTER unlicensed GS-441524

24 of 26 cats were still living disease-free at the time of writing




**Major Caveats:** Selection bias & all **unlicensed products**

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# What about Molnupiravir as 2nd-line therapy?

AUSTRALIAN VETERINARY JOURNAL
AUSTRALIA'S PREMIER VETERINARY SCIENCE TEXT

ORIGINAL ARTICLE | Full Access

**Treatment of feline infectious peritonitis in cats with molnupiravir: clinical observations and outcomes for 54 cases**

TM Clark, SJ Coggins, R Korman, J King, R Malik

First published: 15 April 2025 | https://doi.org/10.1111/avj.13433 | Citations: 1

Treatment arm 3

Molnupiravir rescue

Cats administered molnupiravir following a relapse or failure to achieve remission with previous treatments such as GS-441524, remdesivir, and/or mefloquine.

[n=7]

Molnupiravir utilized as a rescue therapy achieved a cure rate of 100% (7/7)

# Based on current availability in Canada, we recommend reaching for Molnupiravir if:

- FIP is DEFINITIVE or CONFIRMED and there is inadequate clinical response to OPTIMIZED GS-441524 therapy
  - Optimized = compounded oral, high-end dosing for the CORRECT weight, BID (q12 hr), fasted (with a small treat)
- FIP relapse (return of clinical signs) following OPTIMIZED GS-441524 therapy
  - Alternatives include combining GS & Paxlovid, or GS & Molnupiravir, for relapse cases
- GS-441524 is cost prohibitive and the alternative is euthanasia

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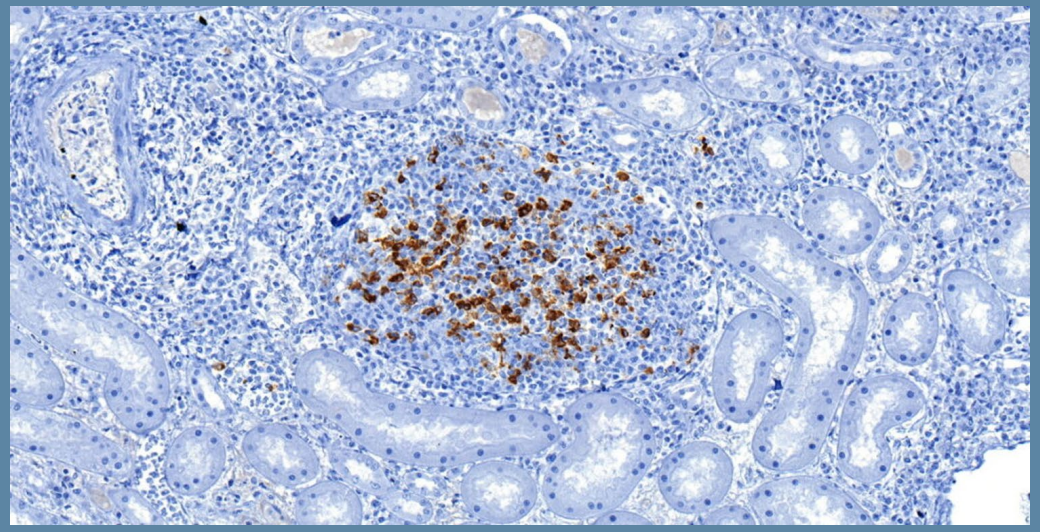
# What is meant by 'definitive' or 'confirmed' FIP?


Feline Veterinary Medicine Association Magazine
**Summer 2025**



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Consistent clinical signs | + | Supportive histopathology | + | +ve FCoV IHC | = | **Definitive diagnosis** | |
| Consistent clinical signs | + | +ve FCoV PCR on effusion/aspirates OR +ve ICC on effusion/ aspirates | + | +ve response to five to seven days of antiviral tx | = | **Confirmed diagnosis** (complete antiviral tx) | |
| Consistent clinical signs | + | +ve response to five to seven days of antiviral tx | | | = | **Presumptive diagnosis** (complete antiviral tx) | |
| Consistent clinical signs | + | No response to five to seven days of antiviral tx | | | = | **Go back to the diagnostics** (to rule out a differential diagnosis [see Table 1] (stop antiviral tx) | |

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# Why not Molnupiravir as first line therapy?

- Higher rates of side effects
- Used as a treatment in people
- Some evidence for viral evolution with SARS-CoV-2
- Teratogenicity

# What about EIDD-1931 (core nucleoside)?

## ID02 - Nucleoside Analogue EIDD-1931 in the Treatment of Naturally Occurring Feline Infectious Peritonitis

Thursday, June 6, 2024 | 10:15am – 10:30am CT | Location: MCC 103 A | CE: 0.25

Research Abstract - Oral Presenter(s)

Alex Kennedy, BVSc MANZCVS (she/her/hers)
Resident in Internal Medicine
Small Animal Specialist Hospital
NORTH RYDE, New South Wales, Australia

Slides | Proceedings/Handout | Slides

9 cats – all showed complete response
(1 relapsed and was re-treated)

Adverse events: transient neutropenia (3), elevated ALT (4), broken whiskers (1), hyporexia (6)

ACVIMFORUM2024

**Abstract**:

**Background:** Current antiviral therapy for feline infectious peritonitis (FIP) has limited availability and can be cost prohibitive. The nucleoside analogue EIDD-1931 is an effective inhibitor against feline infectious peritonitis virus (FIPV) serotype I & II in vitro. Hypothesis: EIDD-1931 is an effective treatment option for cats with naturally occurring FIP.Animals: Nine client-owned cats diagnosed with effusive or non-effusive FIP including neurological involvement.

**Methods:** Prospective clinical trial. Cats were administered EIDD-1931 orally twice daily for 12 weeks. A complete response was defined as resolution of all abnormalities associated with FIP. Clinical variables, hematology, biochemistry, and imaging findings were monitored during treatment and after discontinuing treatment.

**Results:** Six cats with effusive FIP and three cats with non-effusive FIP (median age 1.0 years, range 0.5-7.9) were treated with EIDD-1931 (median dose 18.75mg/kg PO q12, range 12.0-23.8) for 12 weeks in eight cats and 14 weeks in one cat. All cats showed a complete response to treatment. Adverse effects included transient neutropenia (three cats), elevated alanine transaminase (transient in three, persistent in one cat), broken whiskers (one cat) and suspected treatment induced relative hyporexia (six cats). Adverse effects were not dose dependent. Follow up was available for 91-231 days post treatment discontinuation. Relapse in one cat, 70 days after EIDD-1931 was discontinued, responded to repeat treatment (25mg/kg twice daily). Conclusions and Clinical importance: EIDD-1931 administered at 15-20mg/kg PO q12 for 12 weeks is a feasible treatment option for naturally occurring FIP. Adverse effects may be more common than treatment with GS-441524.

**Bottom Line:** *Very limited* evidence available, but may have more side effects than either molnupiravir or GS-441524/remdesivir

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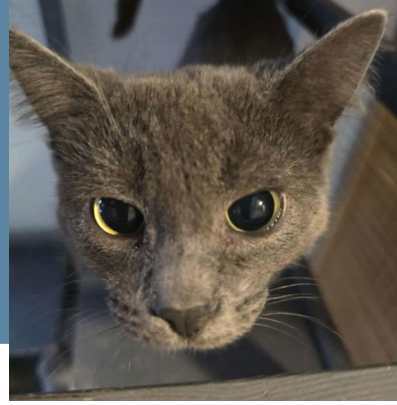
# Treatment Protocols



Jelly Bean

| Form of FIP | EIDD-2801 (molnupiravir) | EIDD-1931 |
|---|---|---|
| Effusion(s) and without ocular or neurological signs | 15 mg/kg q12hr | 15 mg/kg q12hr* |
| No effusion and without ocular or neurological signs | 15 mg/kg q 12hr | 15 mg/kg q12hr* |
| Ocular signs present (± effusion) | 15 mg/kg q 12hr | 15 mg/kg q12hr* |
| Neurological signs present (±effusion) | 15-20 mg/kg q 12hr | 20 mg/kg q 12hr* |

***More studies needed!**

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# Treatment Protocols

*Muffin*

**12 weeks/84 days of treatment**

- Be sure to monitor weight and adjust dose

**Use caution when exceeding 15mg/kg**

- Dose-dependent side effects can occur

**Teratogenic**

- Use gloves to handle
- Not recommend for pregnant women to administer

**Fasting not required**

***More studies needed!**

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# Side Effects

- GI (decreased appetite, nausea, hypersalivation, vomiting, diarrhea)
- Increased ALT
- Neutropenia
- Folded ears
- Broken whiskers
- Skin (hives, pruritus, alopecia, erythema)

# Monitoring of antiviral therapy for FIP

- Physical exam (weight check) 2 weekly OR weekly weight checks at home if digital scales
- Focus on clinical response in the first 2-4 weeks of treatment
- CBC/Biochem  approx. monthly*
- If a dose increase is required, recheck 1-2 weeks after dose increase to ensure response
- If dose extension is required, recheck 2 weekly until remission achieved

***Consider more frequent** with Molnupiravir (q 2-4 weeks) - severe leukopenia can require switching drugs!

# Be aware: the black market has not gone away…

Observed gimmicks/draws :

- Undermining veterinary authority/claiming extensive knowledge & experience not possible to be held by DVMs
- Buy-back advertisements/"successful treatment or your money back"
- Products labeled as "for research" or "compassionate use"
- Offering free antiviral drugs with purchase/subscription for supplements& nutraceuticals
- Peer-to-peer support (not a gimmick, but a real draw)

Intended for cat CAREGIVERS
DVM survey coming soon!


**Take the survey here:** https://colostate.az1.qualtrics.com/jfe/form/SV_3EmuwItPU1qxPIq

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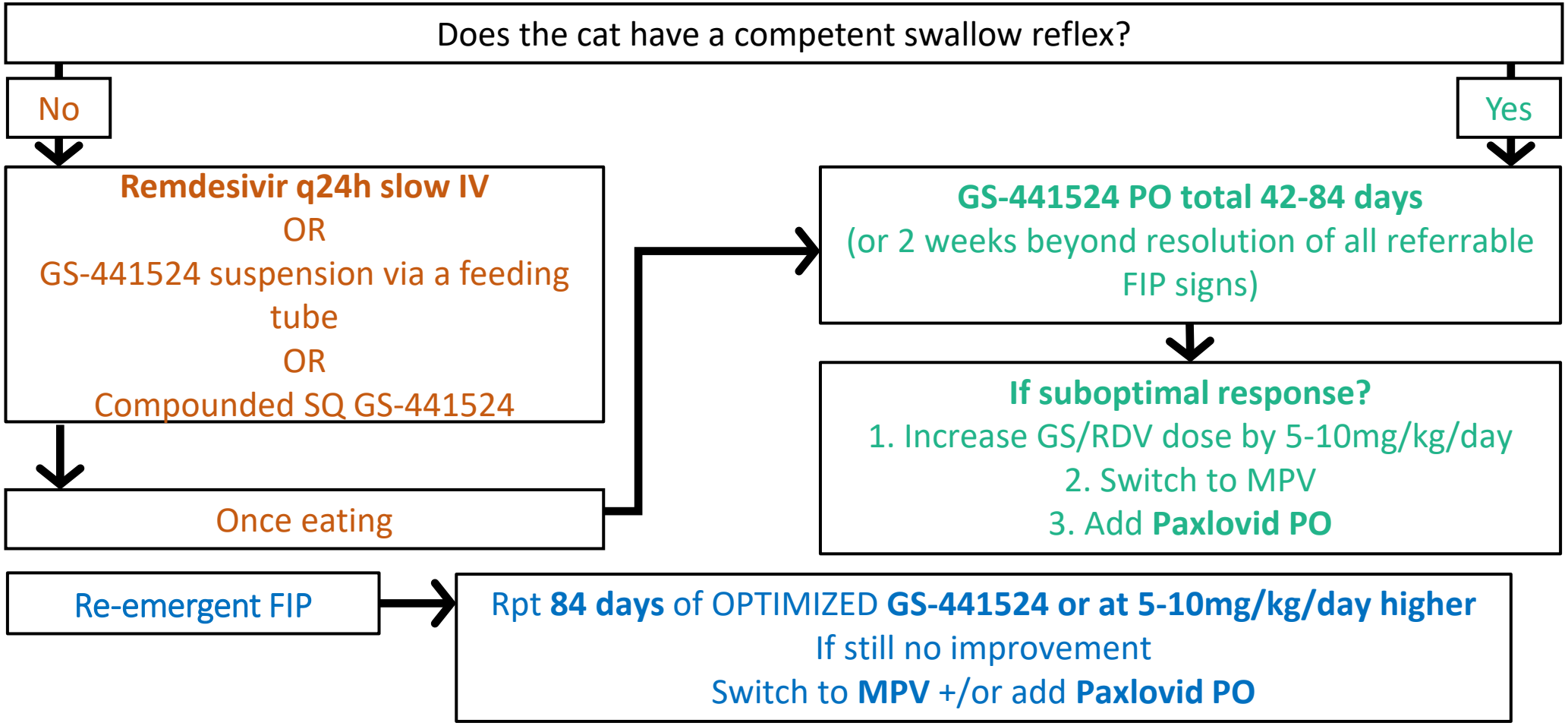
# How would I decide which antiviral to use in practice?



# Case Example from Canada

Contributed by Krista Geddes (FIP Advocates & Champions of Canada)

Brutus- 7 y/o MN cat presented for ataxia, inappetence, and weight loss

- Jan 2024 – Initial presentation
- Feb 2024 – tetraparesis; incontinent; hyperglobulinemia w/ A:G 0.4
- March 1st – Started GS injections at 10 mg/kg and prednisolone (weaned 3 weeks into treatment). GS dosage increased to 13 mg/kg a few days later
- April 14th – Switched to GS capsules at dosage of 30 mg/kg; increased to 40 mg/kg 5 days later

# Case Example from Canada

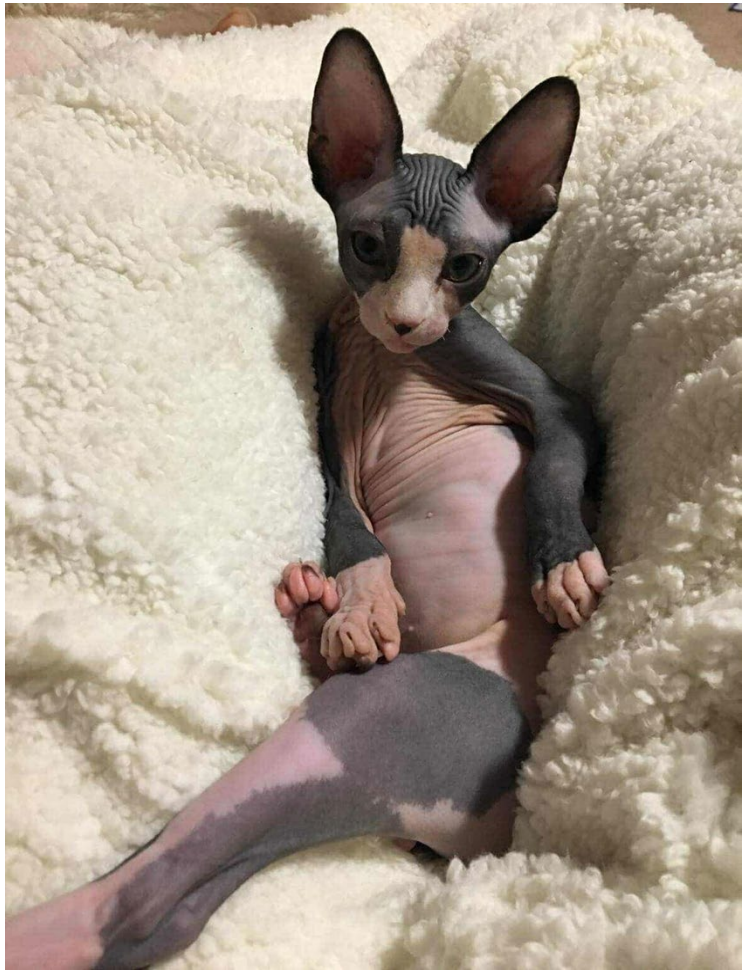
## Brutus, Continued

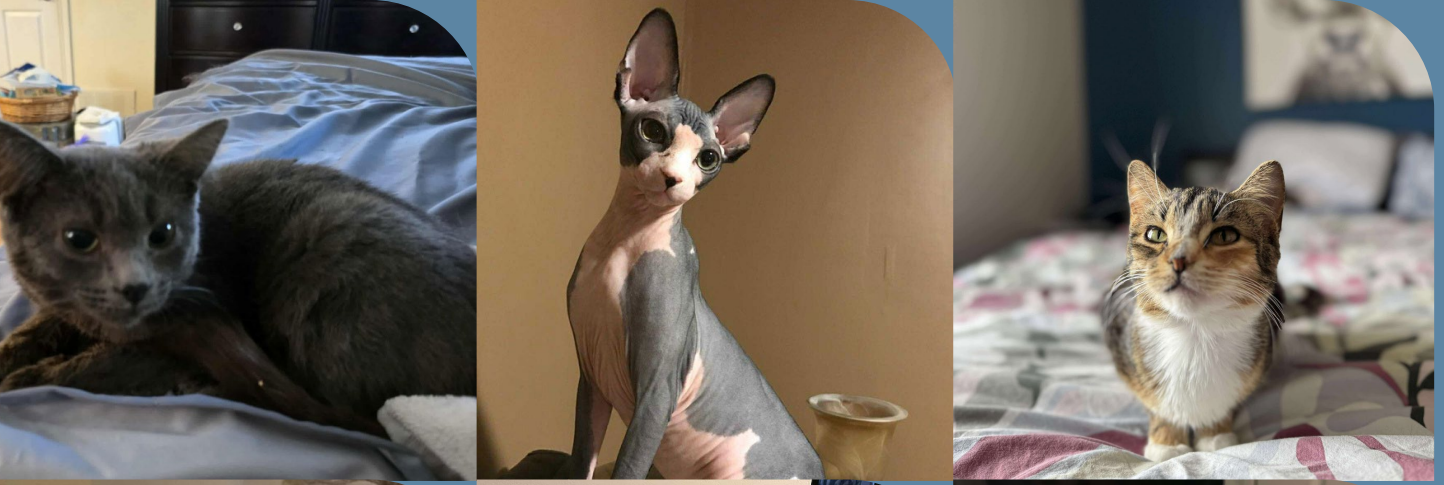
- Pattern was that Brutus would respond well to a dosage increase for 1-2 weeks, then regress drastically
- Treatment lasted 188 days – ended with 75 mg/kg GS
- Sept 28th, 2024 – stopped tx, still has neuro defects
- May 22nd, 2025 – Brutus started a clinical decline
- June 3rd – started becoming paretic
- June 6th – re-started GS capsules – minimal improvement
- June 12th – started molnupiravir at 15 mg/kg BID

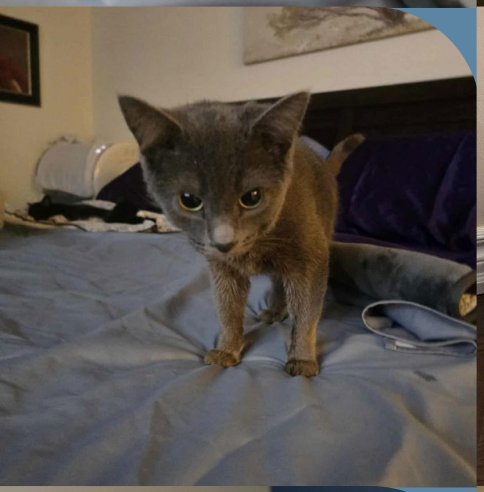
# Case Example from Canada

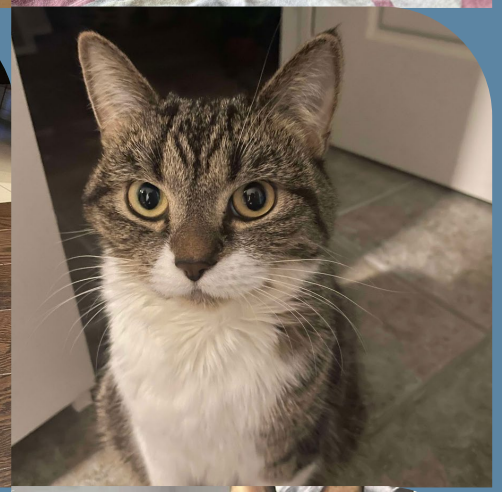
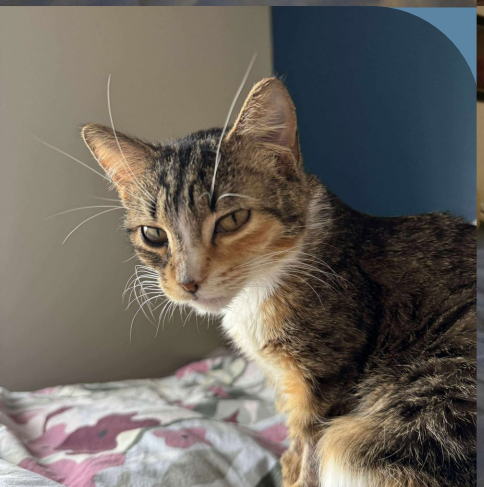
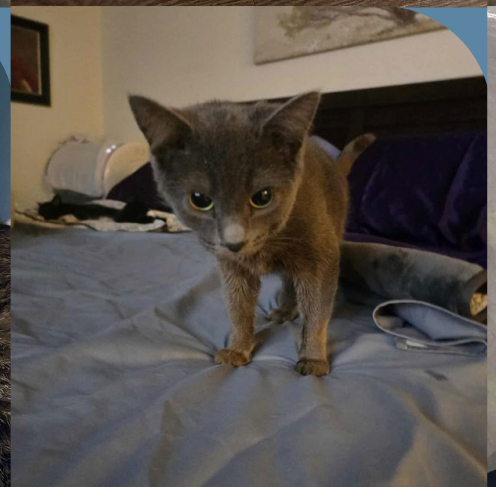
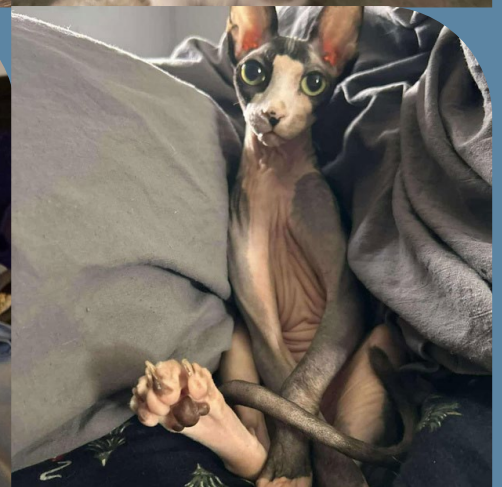
Brutus, Continued

- June 21st – marked improvement in neurologic signs and appetite/energy
- Sept 6th – finished treatment.  Never required dosage increase of MPV
- Still doing well today!





# CANADIAN KITTIES TREATED WITH MOLNUPIRAVIR

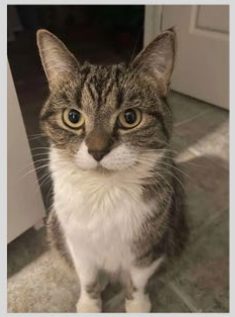
## Canadian Kitties Treated With Compounded Molnupiravir

### Brutus

Neuro FIP
Relapse &
GS Resistance

Ended TX
Sept, 2025

### Minako

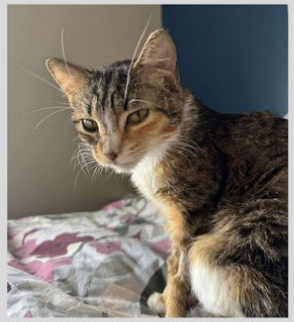


Dry FIP
Relapse &
GS Resistance

Ended TX
Sept, 2025

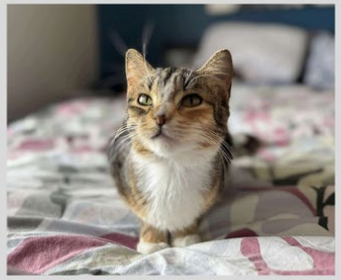
## Canadian Kitties Treated With Compounded Molnupiravir

### Muffin

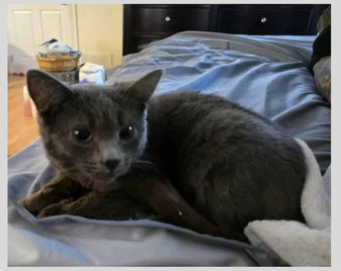


Dry FIP
GS Resistance

Currently in
Treatment

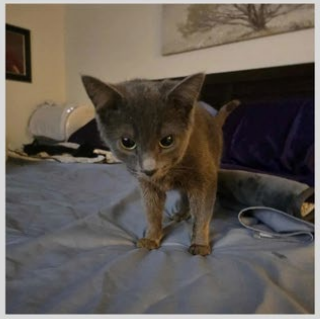


### Jelly Bean



Neuro FIP
Relapse &
GS Resistance

Currently in
Treatment



international cat care

# An update on the treatment of feline infectious peritonitis

*(July 2025)*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Pharmacy & Compounding Centre

# QUALITY & SAFETY STANDARDS FOR COMPOUNDED VETERINARY PRODUCTS

19 November, 2025 | Clearpoint Pharmacy

# QUALITY & SAFETY STANDARDS (Compounded GS-441524 and Molnupiravir)

Compounded using high-quality ingredients from a Health Canada–approved Canadian GMP wholesaler

Certificate of Analysis (CoA) issued for the product confirming regulatory compliance

Potency validated for a 6-month Beyond-Use Date (BUD) to ensure stable, consistent results for GS-441524



CLEARPOINT
Pharmacy & Compounding Centre

# Veterinary & Client Support (Compounded GS-441524 and Molnupiravir)

## Educational Resources

Dosing guides, treatment protocols, and client handouts

Access to our Veterinary Portal for online ordering, success stories, blog updates, and resources for veterinarians and pet owners

## Comprehensive FIP case Tracking and Follow-up

For every case we treat, we record the cat's gender, age, weight, and diagnosis (type of FIP)

At the 2-week follow-up with the cat owner we:

- Ensure they have an appointment booked with their veterinarian
- Document symptom progress
- Send an update to the veterinarian
- Complete a final follow-up at the end of treatment to provide a full case summary.

## Pharmacist Qualified and Educated on FIP Treatment

Including dosing and guidelines, to answer all veterinarian and client questions, and a separate French-speaking pharmacist available for GS-441524, Molnupiravir & general FIP inquiries

CLEARPOINT
Pharmacy & Compounding Centre

# AVAILABILITY & ACCESS

Available in Multiple Dosage Forms


24-hour overnight shipping anywhere in Canada

Same-day GTA delivery for orders before 2PM

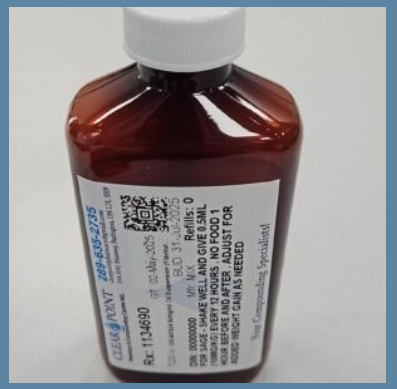

Free shipping on all orders



CLEARPOINT
Pharmacy & Compounding Centre

# GS-441524 Formulations

(All with 6-Month Expiry, Likely Longer)

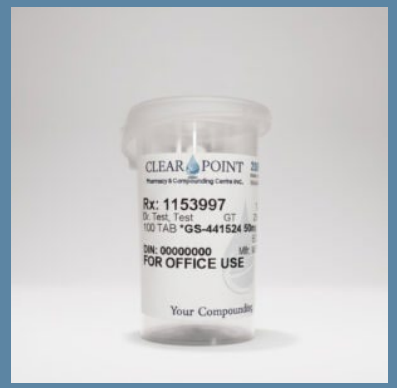


- **Oil Suspension (50 mg/mL)**
  - **Chicken or fish flavour**
  - **Orderable in multiples of 10 mL**
- **Capsules (25 mg, 50 mg, 75 mg, 100 mg)**
- **Tablets (25 mg, 50 mg, 75 mg, 100 mg)**
- **Injection (10–20 mg/mL) – Used mainly in hospital settings for cats unable to take oral medication. Typical course: 5–7 days. Shelf life: ~14 days**

**We also have Molnupiravir available as a second-line option for resistant FIP cases. Same expiry and shipping terms apply.**

# Molnupiravir Formulations

- **Oil Suspension (50 mg/mL or 100 mg/mL)**
  - **Chicken or fish flavour**
  - **Orderable in multiples of 10 mL**
- **Capsules (25 mg, 50 mg, 75 mg, 100 mg)**





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# NEXT WEBINAR

## Dr. Jeff Aramini: Paving The Way For Regulated FIP Treatment in Canada in 2022: Case Series Study Combining GS-441524 and Mefloquin

**Wednesday, January 21 at 7:00 PM ET**

RACE Accredited
RACE Approved

**Dr. Jeff Aramini**
DVM, PhD, MSc, EMTM
Western College of Veterinary Medicine

19 November, 2025 | Clearpoint Pharmacy

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# QUESTIONS?

Intended for cat CAREGIVERS
DVM survey coming soon!

## GET IN TOUCH!


**Dr. Samantha Evans** DVM, PhD, DACVP, DACVM
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**Dr. Sally Coggins** BVSc (hons I), PhD, MANZCVS
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**Clearpoint Pharmacy**
info@clearpointpharmacy.com



**Take the survey here:** https://colostate.az1.qualtrics.com/jfe/form/SV_3EmuwItPU1qxPlq

# THANK YOU

Thank you to our speakers and all participants.

Reminder: CE certificates will be emailed within 7-10 business days.

Recording and slides will be shared with registered attendees.

Stay connected: +289-635-2735 | www.clearpointpharmacy.com [For Veterinarians]

**Future Webinar – January 21st, 2026 @ 7PM EST**
*Dr. Jeff Aramini: Paving the way for regulated FIP treatment in Canada in 2022: case series study combining GS-441524 and Mefloquine.*



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