

USS MARIE CURIE SHIP'S LOG

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Curie News

Welcome back to the Curie! We hope you enjoy your stay with us. Here's the recent news from our lovely Chapter.

Additional changes to our Chapter Handbook have been made, available on our website at usscurie.org. Notably, those crew members who take on more responsibility and act as chiefs of their respective departments will receive an automatic promotion to Lieutenant.

Monthly updates on Chapter activities, called the *Ship's Log: Supplemental*, are posted to the website monthly. Feel free to download our recent editions to bring yourself up to speed on what we've been up to between our quarterly newsletters.

Finally, with more time on our hands as we enter year two of the COVID-19 pandemic, some crew members have begun participating in Lieutenant Bryan's weekly radio show, "The Pull List," a conversation hosted in our Voice Channel that covers all things comic books! Additionally, some of our more musical members have floated around the idea of forming a band, more news on that in the future.

The NCC-74699 Marie Curie dims her lights for the thousands of lives lost over the last year to the various plagues of our society. We salute the STARFLEET members who have been claimed by violence or sickness, and honor their service to our organization.

Command

Captain Steven – Commanding Officer

First Officer Meg "Squirrels" – Executive Officer

Science

Commander Brian – Chief Science Officer

Lieutenant Elise – Ship's Librarian & Judge Advocate General Officer

Ensign Seth

Lieutenant Bryan

Operations

Lieutenant Commander Ren – Chief Operations Officer

Lieutenant Jen – Deputy Chief of Operations

Ensign Eusebia

Ensign Patrick

Engineering

Commander Meg "Squirrels" – Chief Engineering Officer

Tactical

Lieutenant Erica – Chief Tactical Officer

Ensign Bianca

Communications

Lieutenant Samantha – Chief Communications Officer

Medical

Commander James – Chief Medical Officer

Lieutenant Commander Heidi



Department Reports



Captain's Log

Captain Steven

I have been so busy between work and family that I have had little time for anything extra. Unfortunately, my activity participation will be minimal for the time being.

Luckily, I have a great Command Staff and Crew to help when possible.

LLAP!

Squirrels' Stash

Commander & Chief of Engineering Meg



Working on getting us into a decent workflow as a group this quarter. I popped up a Trello for the Command Staff recently so we could keep track of all the discussion and projects we've got going right now; it is visible to crew as well, so if you want to see what we're all up to, please pop by. The link is in the #important-things channel of our Discord. I also worked with Ren on some literature about the COVID-19 vaccine that serves as the "Status Report" of this quarter's newsletter. New policies are in the works as well, be ready for ship wide votes!

More of the same as always for Engineering! Tweaks to the Discord server, addition of some new links in #important-things, fixed a few permissions for folks that weren't working correctly, documents uploaded to the website. Everything continues to run as expected, and here's hoping that continues!



The Hemostat

Chief Medical Officer James

First Quarter the Medical Department was busy surviving life. Personally, I got the Moderna COVID Vaccine on January 1st and February 1st, and have been taking a lot of real world Continuing Education classes. COVID Brain Fog and Depression are real things, and there is help available. Your Chief Medical Officer urges everyone to seek assistance in these trying times—your brain will be glad you did!



Beam Me Up!

Chief Operations Officer Ren

I would like to start off with some congratulations to the Deputy Chief of Operations, as she has now been formally promoted to LTJG! A promotion that has had a long time coming, for sure.

A discussion based around comics was started with LTJG Bryan at the helm with “The Pull List,” aptly named after the radio program that he hosts with his local radio station. We’ve had a good introduction to everyone’s introduction to comics, and each visit has been centered with different focuses, such as Captain America and Wonder Woman. Sometimes, it’s just good to talk about something we’re passionate about and have in common, especially as we are in our second year of this pandemic.

Personally, as my quarters are actively in construction at various times, it has been fairly challenging to work on the various projects we have in store in Ops. One such project, is to see if we can put together a little band for the ship. This is still very much in the beginning stages, so hopefully it will take off.

For now, what’s been established is still running smoothly, which—out in the reaches of the Final Frontier—is more than most of us can ask for. We hope that we can expand and improve operations in the near future.



The Redshirt

Chief Tactical Officer Erica

Tactical continues to lead The Curie Book Club weekly with a new book and series starting soon. Tactics also shared information for Texas crew members regarding safety, supplies, and warmth during the Texas storm as well various state changes that will affect health and wellness.

Shhh!

Ship’s Librarian & JAG Officer Elise

With a successful vote of 11 yeses, 9 absences, and 1 abstention, all Command Staff will be automatically promoted to a rank of Lieutenant if not already so. Aside from that, the library is researching away for an appellate case with arguments later this month.





It's Alive!

Chief Science Officer Brian

Mars' Perseverance mission is going great, and I'll have a totally awesome update for the next quarterly. Springtime has arrived and we'll have a brief reprieve from gnarly La Niña winter. Go outside and enjoy this nice weather while it lasts, breathe in some fresh air... hell, sit in the grass like you used to as a kid. Chase a butterfly, photograph bees. Go back outside at night and just look up at the stars for a while. It's going to start getting hot outside soon, so enjoy spring while it lasts and recharge your batteries.

A La Niña summer means cooler and moister Caribbean air mass than usual which could hamper tropical development for this season. Meanwhile, the storms that manage to develop across the southern states will be more severe than usual which will produce stronger and more frequent tornados due to increased divergence aloft. If you're traveling through or living in the central and southern states through July, please keep an eye on swiftly moving storm systems as they will be more hazardous than typical. Point-in-fact, the last time we had a strong La Niña spring/summer was in 2011, which produced 1,600 tornados (including the EF-5 which devastated Joplin, Missouri).

Meet the Press

Chief Communications Officer Samantha



Since last time, I've been working on developing a good monthly timeline for the Ship's Log and Supplemental. I have now decided on a finalized timeline we will stick to from here on out! Chapter members should receive chapter updates and materials to their email inboxes on the 7th of every month, with our Supplemental coming in every month we don't have a quarterly Ship's Log. These materials will also be posted on our website for new members to peruse and get familiar with our recent activity. Interested in writing something for our Summer 2021 Ship's Log? Reach out to me and let's set something up!

This Ship's Log features department updates from all chiefs, a Status Update from Lieutenant Ren & Commander Meg, Astronomy Spring Observing Targets, and a Science Deck Nebula article from Lieutenant Brian.

Enjoy!



Status Report

Vaccine Q&A from our Resident Experts



Photo collage courtesy of StarTrek.com

Before we begin, both Ren and Meg work in health care. We do not, however, provide your personal health care, and as such we are not here to offer you any medical advice. This is just a FAQ on vaccine science and safety pertaining to the COVID-19 (Coronavirus Disease 2019) vaccines and their variants.

Dammit Jim, we're STARFLEET, we're not your doctor. If you need medical advice, please contact your physician.

For the most up-to-date information on COVID, guidelines on public safety, and information on any new vaccine variants, we recommend you visit this CDC (Centers for Disease Control and Prevention) website: [Coronavirus Disease 2019 \(COVID-19\)](https://www.cdc.gov/coronavirus/2019-ncov/).

How did the clinical trials for these vaccines work? Why were they so fast?

As with any drug or vaccine, the FDA (Food and Drug Administration) restricts all applicants to follow a research process (which usually is a molecule generated by a computer and that molecule is fitted with known bio-receptors theoretically to see what the effect would be, or in the case of vaccines, they use either known or advances in technology to produce an immune response; this is Phase 1). Then the preclinical process (Phase 2) begins, where safety tests are performed. The safety tests are done on animals that are known to have similar reactions to that of humans (such as pigs) to ensure that the drug is safe. This is particularly important for the pregnant population, as we have a particular aversion to testing on pregnant women for fear of teratogenicity (fetal developmental issues).



Once that is done, it is tested on humans to determine safety (Phase 3) and data is observed for efficacy (Phase 4). There's also stuff regarding “orphan drugs” (which are drugs for conditions that are rare and would not be considered profitable to be made otherwise), and emergency use. In the latter, you'd have a situation where Phases 3 and 4 are still done (though expedited), but may be otherwise combined (basically, the data is observed *during* the tests, rather than *after* the tests are done). This cuts the time significantly, because oftentimes for some conditions you have situations where scientists observe reactions for 10 years depending on whether it's a chronic or an acute situation. If you just fall ill due to infection, you're likely to see a shorter observation time, whereas for something like heart disease that is underlying, you need to observe over a longer period.



Lastly, you have Phase 5, where the FDA has approved the medication and the company monitors what we call a “MedWatch database” for what recipients report as adverse effects. These are less controlled, because they happen in the wild, so you might sometimes see something valid, but sometimes may just be people attributing symptoms from something else to the drug. It's why you see stuff like nausea and vomiting on almost everything (but at a low percentage), or you might find the lists of effects on drug commercials to be long and spoken really fast. Side note: the side-effect monitoring process for vaccines is known as “VAERS” or “Vaccine Adverse Effect Reporting System.” It is also a self-reporting system, so the above statements apply.

So, with that said, typically if you go through the process, you require a lot of funding and stuff to submit applications and whatnot to the FDA. This is a typical stopgap for some because they need to beg investors and stuff to get the money. What Operation Warp Speed did was get rid of some financial burdens for the companies working on the vaccine, so that it wouldn't run into these slowdowns—as well as having a stockpile ready, instead of waiting for approval before production. Add Warp Speed, plus Emergency Use, and you have a typical or expected span of time that this vaccine would be out. Most of us said it would take a year, but everything put together helped it along.

Is this testing speed safe? Are the vaccines produced going to be as safe as ones that normally take longer?

The vaccines currently being distributed in the US and many other countries are safe. The trials done on them are the same as the preclinical trials you'd normally see on every medication. The timeline was just sped up by things stated in the previous answer.

Will there be unknown effects after the initial batch?

Possibly. There's always post-clinical studies, as previously mentioned, so a few people here and there may be susceptible to certain things. In particular, you might be someone that both needs it and has an issue with it.



There were two incidents we know of in the UK where a patient who had previous issues with anaphylaxis had reactions to the vaccine by Pfizer/BioNTech. For more on anaphylaxis responses and what vaccine-providing medical staff in the U.S. are doing to safeguard in case of one, check this link from the CDC:

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/allergic-reaction.html>

Should I be concerned for my safety if I get this vaccine? What's being done to monitor that?

You shouldn't be concerned any more than you would be with any other vaccine; the side effects reported by the general public are pretty much the same as those of the annual flu vaccines. Not only are the preclinical safety measures in place and being followed, you'll usually be monitored for fifteen minutes after your vaccine at the site of administration to make sure you don't have any immediate reactions, and once you go home you can take part in a nationwide vaccine monitoring program (VAERS) to help ensure people know what type of side effects you have. The CDC has launched their biggest post-vaccine monitoring program ever for the COVID-19 vaccines. When you receive your first shot, you'll be given access to their monitoring site. Sign up and report symptoms daily if you have any. They will text you reminders to do so.

Why do some of the vaccines require two shots and others require one? Shouldn't they all be the same number of doses?

How many doses you will need depends entirely on how the specific vaccine was engineered. As a newborn, you would have received a plethora of vaccinations, many of which require more than one dose. These include but aren't limited to hepatitis B (HepB), rotavirus (RV), Haemophilus influenzae type b (Hib), and an inactivated poliovirus (IPV) vaccination. The HepB vaccination series would be initiated at birth, with the second dose being around one or two months after, and the third at 6 months.

“Vaccinations are necessary for protection from multiple dangerous—and sometimes deadly—diseases. The public health benefits of vaccination far outweigh the possible side effects.”

-Anthony S. Fauci, M.D.



The first COVID-19 vaccines approved in the United States—Moderna and Pfizer/BioNTech—are both two-shot mRNA vaccines. A couple of others worldwide also require two doses, such as AstraZeneca’s two-dose adenovirus-based viral vector vaccine. This is not an uncommon practice for vaccines; a lot of vaccines are multi-dose. This ensures better protection for your immune system based on the vaccine’s engineering. mRNA vaccines use messenger RNA to teach the body’s immune system to build virus parts itself so it recognizes the real thing when it shows up, and can effectively fight it off. One dose will provide some protection, but it takes two doses to properly flood your system with the instructions.

The newer Johnson & Johnson vaccine only requires one shot and is based on a different vaccine technology: viral vector. It uses DNA with instructions on how to build the pieces necessary to fight off COVID and a modified, harmless cold virus to get into the body’s cells and teach it how to fight COVID-19 directly rather than the mRNA of the other vaccines.

AstraZeneca’s vaccine started out in trials as a single dose vaccine, but the trial was expanded to a two-dose series and was found to have around a 79% efficacy from having two doses.

Is the vaccine with only one shot somehow worse, and should I avoid it?



No. Do not avoid getting the vaccine unless you have specific medical reasons for doing so, regardless of which vaccine you are being offered. They’re all effective, carrying overall higher efficacy ratings against COVID-19 than we get from the seasonal flu vaccine, and all of them will help you survive COVID-19 with greater ease if you do still manage to contract it. Even if one’s efficacy rating is lower, your chances—as well as those around you—of contracting COVID-19 will drastically lower as well.

None of these vaccines will 100% prevent you from getting COVID-19; that is not how they work. They just prevent you from getting so sick you end up in a hospital or with other life-altering after effects, which is a big improvement over *not* having the vaccine.

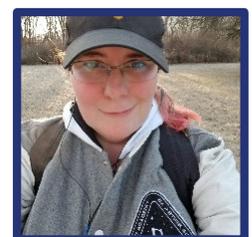
I’ve seen some countries are holding off on giving people second doses, and things are alright for them. Can I stop after one dose of a two-dose mRNA vaccine?

No. One dose of an mRNA COVID-19 vaccine is not enough to provide full protection. You need to follow up and get the booster done when you are scheduled to. For the Pfizer vaccine, this is 3 weeks; for the Moderna vaccine, 4 weeks.

Even though the AstraZeneca vaccine isn’t an mRNA vaccine, the same rule applies - the vaccine is only fully effective on two doses. You must return for your second shot to obtain full protection.



Chief Operations Officer Ren



Commander & Chief of Engineering Meg



Science Deck



First photo of M31, Isaac Roberts, 1888

There's Coffee in that Nebula

Astronomy is a funny science. We look at things, but we can't do anything with these things we're observing. The best we can really accomplish is to lump similar-looking objects together into categories only to have these categories broken apart by somebody else a hundred or so years later. Nebulae are the perfect example of this.

One of the founding fathers of modern astronomy, William Herschel, first described M31, the Andromeda Galaxy, in 1785 as a "great nebulae" and believed it to only be about 18,000 lightyears distant. Despite several discoveries, including spectroscopy revealing an absorption spectrum of stellar origin, M31, and all other galaxies, were considered nebula within our own galaxy. It wasn't until Edwin Hubble's Doppler shifted research of Cepheid variable stars in 1925, which showed that M31 was indeed a *separate galaxy* from our Milky Way. Only then were Great Nebulae removed from the nebula classification.

In modern astronomy, we have only a few subcategories of nebula. The main distinction is the source: recently dead star or not? Recently dead stars produce Planetary Nebula, the rest belong to Diffuse Nebula. Diffuse Nebula are the most common and are large gaseous regions with no well-defined boundaries. These are further divided into Emission, Reflection, and Dark Nebula. Planetary Nebula are the exciting youngsters of this group of astronomical objects. This section contains Planetary, Protoplanetary, and Supernova remnants.

When you think of Emission Nebula, think about neon lights; it's the same principal. You've got some gas and an energy source. That energy source excites the gas's electrons, these excited electrons release photons, and then return to a ground state. For nebula, the energy source is a nearby star producing ionizing photons. There's some overlap in this group with classical planetary nebula as the dying star's exposed hot core is the energy source.

Reflection nebula can either be gigantic clouds of interstellar dust, or a gas cloud which lacks a nearby star to ionize the gas. What's neat about Reflection Nebulae is the spectrum they produce tells us little about the actual nebula, but rather is the spectrum of the light source! Reflection Nebulae tend to be less illuminated than an Emission Nebula since the nebula itself isn't emitting light, but is reflecting an outside source's light instead.



Dark Nebulae are a bit of an extension of Reflection Nebulae, but are far more dense and unable to reflect light at all. These molecular clouds tend to be vast and can extend the width of entire galaxies. The Milky Way has a gigantic Dark Nebula called the Coal Sack which blocks us from seeing the other side of our galaxy. We need to use radio and infrared to see through these massive structures.



Orion nebula region

Planetary Nebulae are spectacular, albeit short lived objects. These objects originate from the dying process of stars, and only vary by phase and size. These all share the characteristic of Emission Nebulae, in that their gas is being bombarded by ionizing radiation from their source star. Planetary Nebulae are almost entirely composed of the outer shells of stars of intermediate mass such as our sun. The source star at the core of the nebula is typically a white dwarf at this phase and produces the UV radiation required to ionize the gas cloud. These nebulae last only a few tens of thousands of years.



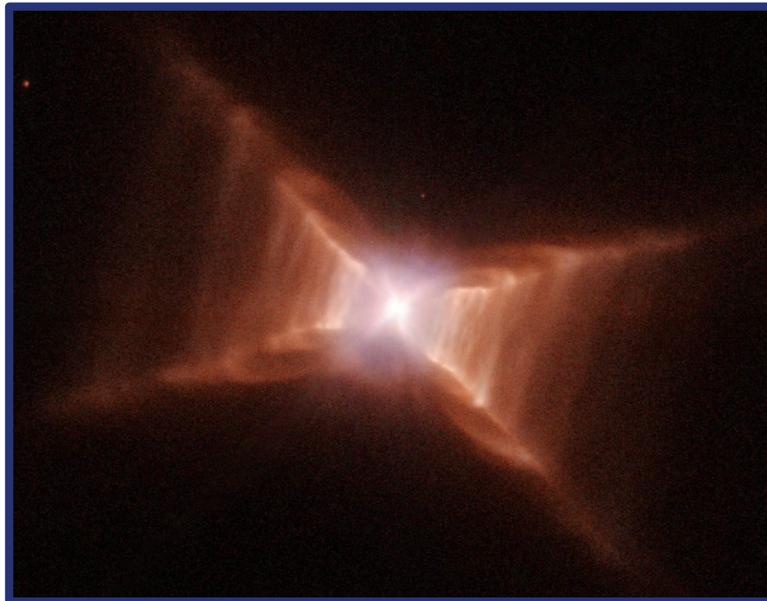
NGC 7293, Helix Nebula

Protoplanetary Nebula is an even shorter lived episode in the dying process of an intermediate-mass star. This nebula forms before the Planetary Nebula phase and is a type of Reflection Nebula. I'll save the details for a future IM-star death article, but when the star becomes too cool to energize its outer shell, the star's faster molecular winds take over and blow material out along magnetic axes.

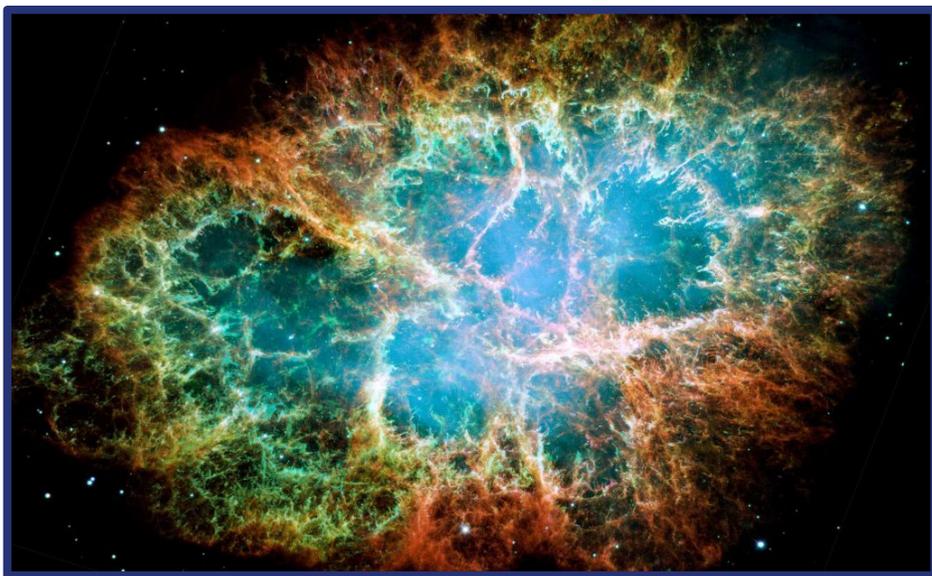
TL;DR; star gets cold, goes *burrmm*.



Supernova remnants are the superstars of Planetary Nebulae. These are the topological complex remnants of extremely large stars which produce extremely violent explosions. When these events happen in our galaxy, they have been recorded for history and observed during the daytime. The Crab Nebula, for instance, is a famous example recorded whose explosion was recorded by Chinese astronomers in 1054. Supernova remnants change so rapidly that astronomers who've observed M1, the Crab Nebula, have documented visible changes over their lifetimes. From December 1995 to April 1996, the Hubble Space Telescope imaged the core of M1 which clearly showed changes in the inner core.



HD 44179, Red Rectangle Nebula



M1, Crab Nebula



Chief Science Officer Brian



Astrometrics: Observing Targets

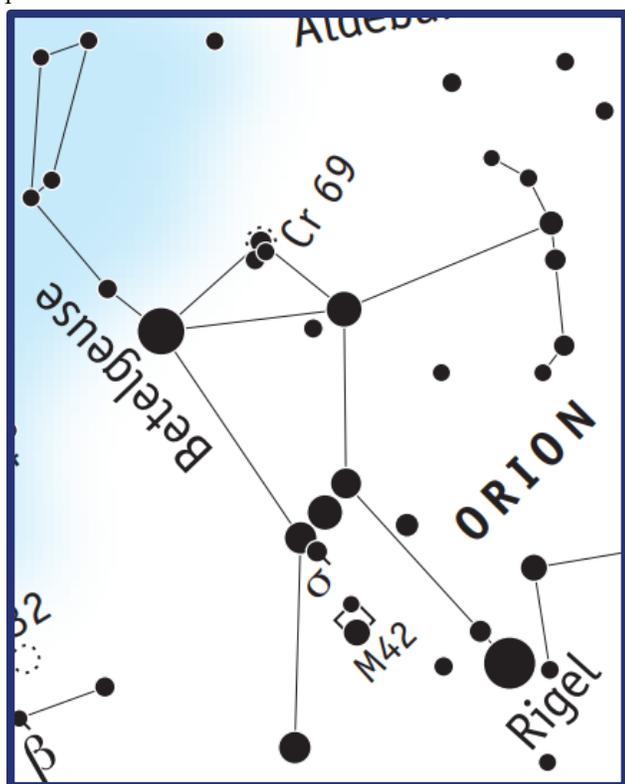


Spring 2021

Well, this winter has been seriously eventful. Texas froze, y'all. Last time I remember this happening was in 1989 in San Antonio, but that time I found a kitten stuck up in a tree. She followed us home, had a name halfway down the street, and Dad was not happy. No kitten this time, just lots of power outages!

We're starting to warm up now, so that can only mean one thing: Allergies! Okay, more on topic... our wonderful galactic core is moving away from the southern sky and taking all the beautiful nebulae with it. We've got a few weeks left of the most famous and easily recognizable constellation: Orion.

This area of the sky is almost entirely composed of a gigantic gas cloud. Most of this nebula system is dark and difficult to image, but where there's nearby stars to ionize the gas, the nebula emits bright lights. The brightest of these is a naked-eye object, M42 or the Orion Nebula. It's centered in Orion's sword and can easily be seen even in the worst light pollution.



The Orion Nebula is a highly popular astrophotography target and is usually used to test new equipment. I recently captured the header photo from my own backyard in Houston of M42. This is a narrowband image, meaning I used specialized filters that only let in specific wavelengths of light. This limits light pollution to only one of my filters, the Oxygen-III filter, which is easily removed in processing. The other two filters I used for this image were Sulfur-II and Hydrogen-Alpha. It's cloudy down here this time of year, and I only had three clear nights in a row, so total exposure time was just short at 274 minutes.

After Orion is gone, we'll be in a bit of a dull drums for observing targets until midsummer when the galaxies take over.



Chief Science Officer Brian



Captain's Log: Supplemental

It has been over a year since the World Health Organization declared a worldwide pandemic due to COVID-19.

In that time, we have seen our world change before our eyes in ways we could never have imagined. Not only have we had to deal with the pandemic itself, but we have also had to deal with the social and political strife that has exasperated our ability to fight this disease. The fight is not over.

This month also marks my first full year as Commanding Officer of the U.S.S. Marie Curie. I am humbled and fortunate to have taken Command of a STARFLEET Chapter that is centered around science, and strives to achieve Gene Roddenberry's vision one step at a time. Personally, I feel that this is unique amongst the many Star Trek fan groups I have encountered, whom (more often than not) seem to fall short on this goal. On the Curie, Star Trek is more than a TV show or roleplay.

Thus, I want to take the time to encourage everyone to get their COVID-19 Vaccination. As I said before, the fight is not over. We must all do our part to ensure that we can bring a speedy conclusion to this pandemic and reduce the amount of casualties caused by it. We seem to have all done very well with the guidance issued by the CDC (social distancing, washing hands, wearing masks, etc.). Now it's time for us to take the next step in doing our part.

I encourage everyone to get in contact with their primary care providers and organizations that may be able to provide the vaccination to them. If you're unsure what to do or where to go to get information, we have many health professionals and government employees aboard this chapter who can guide you in the right direction.

For more information about the Vaccine, please see this link to the CDC:

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/keythingstoknow.html>

As always, Live long and prosper. We are one crew striving for a better future.

Remember: Be bold. Be brave. Be courageous. We are the USS Marie Curie.

We are STARFLEET.



Captain Steven



Enlistment Information

Are you a Starfleet International member?

Great! Email us at computer@usscurie.org and let us know what you want in a SFI chapter, and we'll find a place for you in our online community.

Not a Starfleet International member?

No worries! While we highly recommend joining SFI, our chapter accepts interested "civilians" regardless of their association. If you're interested in joining STARFLEET, check out their official website sfi.org, then email us at computer@usscurie.org and let us know what you're looking for!

A recruitment poster for Starfleet. The background is a blue and white nebula. A large, detailed illustration of the USS Enterprise-D is shown from a three-quarter perspective, flying towards the right. In the top right corner, there is a circular logo for the USS Marie Curie (NCC-74699). In the bottom left corner, the text reads "U.S.S. Marie Curie, NCC-74699" and "computer@usscurie.org". In the bottom right corner, the text reads "Join STARFLEET" in large, bold, black letters with a white outline, and "The International Star Trek Fan Association Inc." in smaller black letters below it. A small Starfleet logo is positioned above the main text.