

Biofilm Create!

#BIOFILMCREATE

Thank you for taking an interest in our Biofilm Create! competition.

We've put together this guide on where to find biofilms, with tips on snapping biofilms either in real life, or under the microscope.

This guide also covers the definition of 'art' and provides examples of the different forms that we will accept.

WHAT IS A BIOFILM?

A biofilm is the collection of single-celled organisms that live together in a group structure. The name has two parts: "bio" because it is made up of living creatures and "film" referring to the thin, clinging structure. Essentially, biofilms are communities of micro-organisms that stick to each other and to surfaces.

Without realising it, you actually see biofilms every day – they are all around us. Biofilms grow particularly well in wet areas. From the slime on rocks in streams (even in hot springs), or frozen glaciers, to washing machines, to our own bodies, for example the dental plaque on our teeth.

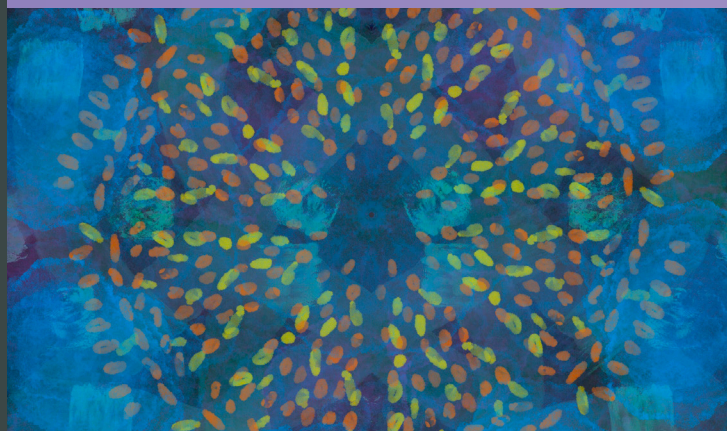
Biofilms will form on virtually every non-shedding surface in non-sterile aqueous or humid environments.

BIOFILMS AT HOME/MAKE YOUR OWN

- In washing machines
- Kombucha
- The light pink areas in your shower
- The grey parts you can see in your pipes
- A mouldy ceiling or window sill
- The slime that forms on meat and vegetables (particularly mushrooms) past their use by date

BIOFILMS OUTSIDE

- Slime on rocks in streams and in hot springs
- Surfaces of stagnant pools of water
- On the surface and inside plants
- Stromatolites
- Inside water and sewage pipes, tanks and silos
- Wastewater treatment systems
- Mussels and barnacles stuck onto biofilms on ship hulls



Photography

TAKING MACROSCOPIC IMAGES

- Use what is called the rule of thirds. Placing your subject in the centre of your frame is a common practice. Although it can be appropriate to centre your subject, it is often more interesting if the subject is placed to the right or left of centre.
- Avoid Camera Shake - Camera shake or blur is something that can plague any photographer so try and keep your camera or smart phone still using both hands to keep steady, or use a tripod if you have one!
- Clean the lens. Photos looking a little milky? This is the biggest problem with cameras on smartphones as they are often in our pockets. Use a microfiber cloth on your lens to wipe any dust or smudges away.
- Focus! Avoid just pointing and pressing the button. Take time to make sure that what you want to take a picture of is in focus. If you are using a smartphone, just touch what you want in focus on the display and often that will just click into place.
- Make sure you have plenty of natural light and avoid using the flash! But think about where the sun is when you pull out your smart phone or camera. Shoot too close to the sun - i.e., pointing towards it - and you might find that a giant lens flare dominates the scene or that subjects are masked by blown highlights with no detail in those areas.
- Watch out for extraneous space around the subject of the photo. Don't be afraid to zoom in or to physically move closer to your subject in order to keep the focus of the picture on the subject.
- If you are using a digital SLR camera, take a look here at the [National Geographic website](#) for some handy tips.

TAKING MICROSCOPIC IMAGES

- You can use any of the huge range of imaging tools to snap your biofilm(s), including but not limited to, white light microscopy, epifluorescent microscopy, SEM, DIC, light sheet microscopy, and AFM. The use of stains, probes, and transformed plasmids is allowed too.
- The images will be judged both on scientific and artistic merit, so take your image with a clear idea of what it represents.
- Be aware of colour and composition, and the clarity of your image. Some imaging techniques do not lend themselves to dynamic images, so be creative.
- Using image editing software such as Fiji is fine (e.g., to add false colour), and can enhance scientific and artistic aspects of your image.
- You can use compiled Z stacks and 3D images to create your image, but ensure you find the best angle for submission as a 2D image.
- Minimum pixel dimensions should be 480 x 640, and 300 dpi.

Photographs should be submitted in either a tiff, png, or jpg/jpeg image file. If you require support in resizing your image in order to send, you can use an online resizing tool such as [Adobe Express](#). If you prefer, you can send us your entry in a link using [WeTransfer](#).

Art

DEFINITION OF ART

Art in any form is an expression or application of human creativity, skill, and imagination. Many of the arts are experienced visually but can also be audible or enjoyed through sensory touch. Arts were traditionally appreciated primarily for their beauty or emotional power but are now often used for political expression or social commentary - [Eden Gallery](#).

Although there has been much speculation regarding the definition of art over the years, there is a general consensus that there are seven main kinds of art, most of which have been around for centuries if not thousands of years. These different types of art are painting, sculpture, architecture, literature, music, cinema, and theatre.

EXAMPLE ENTRIES

- Painting, illustration, graphic design, 3D rendering, textiles, sculpture, modelling, mosaic, carving, printmaking, petri-dish art
- Short film, dance, dramatic performance
- Music
- Poem, short story

This list is not exhaustive - so please feel free to get creative!

Many of the tips for taking macroscopic images on page 2 will also apply to photographing physical artwork. This [Art Web blog](#) provides some further detailed guidance in this area.

- Entries into the art category which fall under painting, illustration, graphic design, 3D rendering, textiles, sculpture, modelling, mosaic, carving, printmaking, petri-dish art (or similar), should be photographed, and submitted in the formats mentioned on page 2. We will also accept entries in pdf format for this category.
- Entries which fall under short film, dance, dramatic performance (or similar) should be submitted in an mp4 video file.
- Music entries should be submitted in an mp3 or mp4 music file.
- Entries which fall under poem or short story (or similar) should be submitted in a Word document.