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SCISOC AROUND THE WORLD

UNSW SCIENCE SOCIETY
IT/PUBLICATIONS PORTFOLIO

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SCISOC AROUND THE WORLD

EDITOR'S NOTE

Dear Reader,

We are UNSW SCISOC's IT/Publications portfolio and thanks for picking up this publication! We have been working hard on this for a while and are very excited to show you around the world!

After being stuck indoors for months during COVID followed by the travel restrictions, we know just how badly you wanted to travel and see the world. Instead, why not come with us to travel around the world and explore what it has to offer?



Our portfolio has been working hard these past few months looking into different countries, their scientific accomplishments alongside one another and even their unique cuisines. We even looked back in time to find out how our methods of communication have evolved over time, eventually becoming the social media prevalent in everyone's everyday lives.

We hope you find this publication enjoyable and are able to learn something from it!

Sincerely,
IT/Publications Portfolio
2022

MULTINATIONAL COLLABORATION

AND HOW IT IS BENEFICIAL FOR GLOBAL GROWTH

1

'Science lies at the heart of solutions to important problems'

February 2020 began with the outbreak of a coronavirus variant circulating in Wuhan, China. Within a few months, the Quantitative Bioscience Institute formed interdisciplinary collaborations which published research papers mapping out the protein interactions of the SARS-CoV-2 virus. Within two years, the most productive nations joined the global collaborative network in coronavirus research, and the COVID-19 vaccine was manufactured. The momentum of a human tragedy fueled an inexorable race towards joint international cooperation focused on effective prevention strategies. In the face of complex global challenges, an open world thrives, and science transcends traditional boundaries to show how interdependent our world truly is.

2

"International diversity is just as important as diversity of discipline"

In the field of science, discoveries and breakthroughs arise from interdisciplinary thinking where scientists from different fields collaborate through resource distribution and collective action to effectively solve international challenges. The diversity in cultural approaches to problem solving provides opportunities into problem-solving. Thus, "international diversity is just as important as diversity of discipline" when solving and creating solutions for global challenges in the field of science.



European Organisation for Nuclear Research

A large organisation such as the European Organisation for Nuclear Research (CERN) has commented that "an experiment like ATLAS could not have been built without the massive and leading contributions from CERN's member states and other large, industrialised countries." They are "the backbone that made it possible to be open to other countries that have great human talent but little in the way of materials." CERN's success shows how multinational collaboration allows for nations with great scientists but no wealth to be enhanced. Collaboration allows for large organisations to balance the relationships between wealthy and less wealthy countries. Ultimately, this leads to the inclusion of more, greater scientists to facilitate even greater scientific breakthroughs.

Human Genome Project



The existence of the Human Genome Project, an international project that achieved the successful sequencing of the DNA of the human genome allowed scientists to outline the genetic blueprint of the average human, revolutionising the way we understand the human body as well as how humans are affected by disease, at a fraction of the cost and time. International collaboration played a huge role in the HGP in that it connected the academic community, with the idea that "breakthroughs in technology and understanding were best shared." Additionally, seeing how the human genome was an essential piece of information for humanity, it was favourable for a diverse group of humans to participate in its formation.



Millennium Seed Bank Partnership



The Millennium Seed Bank Partnership (MSBP) is the largest off-site plant conservation program in the world, formed by a collaboration of over 100 partnerships worldwide. With the goal of aiding the protection of endangered plant life, the MSBP need multinational aid in order to be able to provide a safe home for the world's threatened plants, later releasing them back into the wild or studying them for scientific research regarding future food or medicines as well as methods to preserve endangered plant species.

Through their collaboration with other biodiversity projects around the world, they're able to send groups to harvest seeds from dryland plants and store them locally within the country, with extras being sent to the MSBP for storage. Global partnerships enable the MSBP to achieve worldwide objectives such as the Global Strategy for Plant Conservation and the Millenium Development Goals of the United Nations Environment Programme.



International Space Station



The International Space Station (ISS) is an iconic scientific creation that has led to a greater understanding of both Earth and the universe outside of Earth, and this was only achievable through the cooperation of various scientists and organisations around the world. Scientists benefit from their cooperation with other nations' scientists as each of them carry years of experience and specialised expertise that can open up new perspectives and approaches in a team environment. In other words, "combining new ideas and historical results brings synergy and improved peer-reviewed scientific methods and results."

Experiments that are too expensive for a single country to perform can instead be performed through the contributions of numerous countries including resources, manpower and experiment hardware. International collaboration also discourages countries from performing the same duplicate experiment, allowing them to instead focus on something else to increase research efficiency and reduce research costs. Countries affected by natural disasters can use the ISS imagery assets to study the disaster and formulate the best response. Additionally, students from all around the world have the opportunity to get involved with the ISS and learn something they cannot at school, thus enhancing the passion and education of future scientists.

A BRIEF HISTORY OF COMMUNICATION

Follow us through this timeline as we explore how humans have been able to communicate with each other around the world



Rock pigeons were chosen and interbred to create homing pigeons, essentially birds that could find their way “home”.

These pigeons essentially could be programmed to fly home from a multitude of different locations. They could make out different visual cues, like natural landmarks and buildings, developing a sense of direction to find their way home. However, this meant the pigeons would have to be manually taken to these destinations before they could make their solo journey. To send their mail, these people used to roll up small parchment paper with their message and fit it in a small glass or metal tube. Once written & stored, the homing pigeons were to be released to fly home, skipping over traffic and human error and ensuring they complete their journey. As absurd as it sounds, these homing pigeons were essential aspects of politics, diplomacy, and even military action. These birds were used to share messages during wartime, easily flying through enemy lines, much more efficient than a man on a horse. Genghis Khan used the pigeon post to stay in contact with distant points of his empire, even in Ancient Greece, homing pigeons were used to announce major events.

The recognition of birds as reliable messengers has been recognised throughout history and they acted as the stepping stone to the instant connectivity that we are more familiar with today.

The simple system all started with the invention of writing and ironically may well have been one of the main reasons writing was invented.

In 1653, Frenchman Jean-Jacques Renouard de Villayer established the first ever postal system in Paris, setting up boxes to collect letters, delivering them if they had postage prepaid envelopes. Unfortunately, de Villayer’s “Petite Poste” business did not last and was an economic failure. Jean did however get his recognition, being depicted on a commemorative stamp by the French post on the occasion of the Day of the Postage Stamp.

Several decades later, a schoolmaster from England, Rowland Hill invented the first adhesive stamp in 1837, an act that allowed him to be knighted. This invention allowed the first postage stamp system in the world to be officially issued (1840). Hill created the first uniform postage rates that were based on weight, rather than size. His stamps made the prepayment of postage both possible and practical.

Thus from that point, in 1874 the Universal Postal Union was established, setting rules for international mail exchanges which covered 192 member countries.

Telephones play a huge role in connecting the world together and is something we take for granted with 1.3 million phone calls being made every minute in 2020. Being able to talk to someone directly with our voice has shaped the way we connect with each other.

In the early 1900s, Almon B. Strowger invented the telephone that did not require an operator, with his rotary dialphone in being implemented into the 1920s. Skipping over to 1973, the first mobile phone was created with IBM later, adding PDA features to the phone which caused customers to go on a craze.

From the 2000s onwards, the telephone has seen exponential advancements where they have become more compact with bigger display sizes, higher quality cameras, and features making it more powerful than some of the first computers all in the palm of our hands. Now telephones serve such a bigger purpose than just making calls with other people whether it’s booking a restaurant, share photos or researching on the internet

Without a doubt, emails are an indispensable part of daily business activities; In most cases, the first action you do in your day is to check your emails.

In 1969, the US Department of Defense implemented a network called ARPANET (Advanced Research Projects Agency Network), allowing for numerous computers to be connected with the purpose of communication between the different departments. Ray Tomlinson invented ARPANET’s networked email system.

This concept of nearly instantaneous communication between machines within an organisation was much more beneficial and practical than the “MAILBOX”. However, the protocols for sending messages from networks became more complex as there was initially no way to indicate where the message was intended to go.

Tomlinson then invented the “@” symbol, which allowed users to indicate a destination for a message. For example, “username@name of computer”.

As emailing became more prevalent, a need was created for software involving the storage and organisation of such emails. Thus, the creation of an inbox.

Mail with wings - How pigeons were the perfect postmen

985 BC



Postal Service

1653



The progression of the telephone over time

~1800



The creation of emailing

~1960



WWW

The birth of the world wide web began in 1989 where British scientist, Tim Berners-Lee, drafted a document titled, 'Information Management: A Proposal' which shared his vision of the World Wide Web. This proposal was later rewritten with Robert Cailliau in 1990, leading to the first web server and browser running at CERN. The world's first website is still accessible today at <http://info.cern.ch/hypertext/WWW/TheProject.html>.

By 1994, the total number of internet users was 44.4 million with Yahoo and the Internet Explorer being some noteworthy creations over the period.

Social Media

Although it may seem unbelievable, the birth of social media dates back to May of 1844 with morse code transmitted through a telegraph machine. Social media became more prevalent in 1969 when the ARPANET emerged which allowed scientists to share their software and hardware while they sat in their offices. Although social media did progress for the next couple of years, it was only until 1997 that the first true social media platform was created, called Six Degrees, however this profile uploading service was short-lived.

2002 saw the introduction of LinkedIn which boosted the progression of social media where it acted as a career-oriented online platform. Then came Myspace in 2003 which became the most visited website ever in 2006 with Facebook later taking this title in 2008.

Some extras and fun facts

Don't worry, we haven't forgotten about Youtube

Being the second-most popular website on Earth - second to google.com, Youtube is a video content sharing website with over 500 hours of video being uploaded to Youtube every minute.



An average of **2.5 hours** is spent on social media and messaging apps



Over 205 billion

emails are sent and received every day

The birth of the world wide web

The world's first website is still accessible today at: <http://info.cern.ch/hypertext/WWW/TheProject.htm>

Facebook



- Launched in 2005 by Steve Huffman along with Elexis Ohanian initially as a news-sharing website
- 300 million active users it has become a social commentary platform

2005

Twitter



- Founded by Kevin Systrom and later acquired by Facebook in 2011.
- Initially launched as a photo-sharing website but has become the world's most visited photo and video-sharing platform.

2010

Snapchat



- Launched by ByteDance (Chinese tech corporation).
- Allows users to share short videos.
- More than 1.5 billion users

2016

2004



2004

- Launched by Mark Zuckerberg
- More than 2 billion active users worldwide.
- Functions such as media sharing, marketing, online chatting and fundraising.



Reddit

2006

- Founded by Jack Dorsey, Biz Stone and Evan Williams as a microblogging platform
- Roughly 1 billion active users



Instagram

2011

- Launched by three students from Stanford.
- Video sharing platform with many personalised filters which attracted a lot of attention.



TikTok

BREAKFAST AROUND THE WORLD

WRITTEN BY: ANDREW GU AND PEGGY QIU

How many of you miss breakfast to catch the bus, the train, or just to get somewhere? Well, if you have or do so on a regular basis, it's recommended you wake up earlier to eat something, whether it be cereal, fruit, toast, anything. The name, breakfast, says it; you're breaking the fast that started the night before—after you last ate—to when you wake up the morning after. It replenishes your glucose to boost energy levels, alertness, and concentration. Breakfast also helps with weight management, and reduces the risks of Type 2 diabetes and heart disease in the long run.

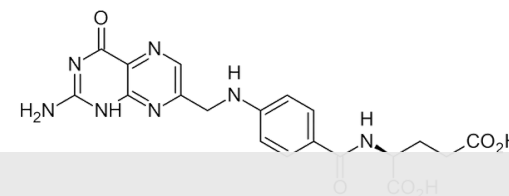
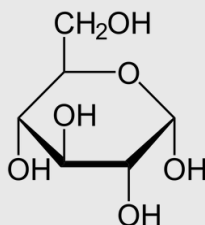


Obviously, breakfast foods vary around the world. Considering your location, priorities, accessibility to different ingredients and a number of other factors, not everyone will eat the same thing. Depending on what ingredients were available, especially during times of hardships, many cultures have adopted their own regional variants of certain foods, for example, porridge. Porridge was traditionally used as an easy way to stretch the food supply in a time of constraint, but it is still widely eaten today around the world.



Breakfast foods are full of key nutrients like **folate**, **calcium**, **iron**, **fibre** and **protein**, which contribute a lot to your daily nutrient intake. Research suggests that people who eat breakfast achieve their daily nutrient intake compared to those who don't. Eating breakfast increases the levels of a brain chemical associated with feelings of reward. This is often why people who don't eat breakfast end up eating something later during the day, often turning to high-energy foods and drinks so they don't feel lethargic.

Our body's primary energy source is **glucose**, which is absorbed from the carbohydrates we consume. Energy is mostly stored as fat, but it is also stored as glycogen, mostly present in the liver. Overnight, the liver breaks down this glycogen and releases it to the bloodstream, maintaining blood sugar levels and brain function. When all glycogen is used, your body decomposes fatty acids for energy, but without carbs, they are only partially oxidised, meaning energy levels will be lower.



FOLATE

Folate is a B-Group vitamin, sometimes called vitamin B9, and is vital for healthy growth and development. It's called folate when it occurs naturally in food, and 'folic acid' when it comes in the form of a food additive or supplement.

Your body uses folate to make DNA, form red blood cells and grow and repair cells and tissues. It's also important for the development of the foetus, as folate is needed for the growth and formation of the neural tube. If not fused properly, it causes a neural tube defect such as spina bifida.

Good sources of folate that you could implement into your breakfast include many breakfast cereals, bread, fruit juices and Vegemite.



CALCIUM

The average adult's weight is made up of about 2% calcium. Most of this is found in the skeleton and teeth - the rest is stored in the tissues or blood.

Calcium is important for proper muscle, nerve and hormone function and plays a major role in the structure of your bones and teeth.

Dairy products and calcium-fortified foods are major sources of dietary calcium. Breakfast foods high in calcium include milk, yoghurt, calcium-fortified soy milk and soy yoghurt, cheese, cottage cheese and other calcium-fortified products.



IRON

Iron is an important mineral involved in various bodily functions, including the transport of oxygen in the blood. Despite being essential for providing energy for daily life, about one third of the world's population is iron deficient, and up to 5% of the Australian population has iron deficiency anaemia.

The roles of iron in the body include:

- Oxygen transport – red blood cells contain haemoglobin, a complex protein that carries oxygen from the lungs to the rest of the body.
- Myoglobin – a special protein that helps store oxygen in muscle cells and iron is responsible for the red colour of muscle.
- Enzymes – many enzymes throughout the body contain iron, including those involved in energy production. Enzymes are catalysts that drive many cell functions.

The two types of iron found in our diets are haem iron (which are easily absorbed by the body) - found in beef, lamb, kangaroo, chicken and fish - and non-haem iron - found in animal tissue, animal-based products and plant foods such as dried beans and lentils.





FIBRE

Fibre is the indigestible parts of plant foods such as vegetables and fruits, and is important for maintaining our digestive health and regulating our bowel movements. Fibre can be split into two categories: soluble and insoluble.



Soluble fibre helps you feel fuller, and can improve cholesterol, blood sugar levels, and even help in warding off diseases such as diabetes, heart disease and bowel cancer. Insoluble fibre is responsible for softening the contents in our bowels, allowing for regular bowel movements.

Foods containing fibre include beans, broccoli, berries, avocados, whole grains, apples and dried fruits.

PROTEIN

Protein is an essential macronutrient that makes up the enzymes which power countless chemical reactions in our body and the haemoglobin that carries oxygen in our blood.

Protein usually comes in a "package", meaning there are other things that come along with it, such as fibre, fats and sodium. Thus, the protein package you choose is what impacts your health, and choosing healthy protein sources like beans, nuts, fish, or poultry can reduce the risk of heart disease, diabetes, cancer, premature death, bone health, weight control, and other considerations involving protein.

Protein is commonly found in beef, poultry, fish, eggs, lentils and pork, as well as other dairy products such as yoghurt and milk.



Though it's often considered "the most important meal of the day", breakfast certainly isn't the same, differing from country to country. Even breakfast staples like porridge and bread can vary so much. So next time you cook breakfast for yourself or for others, consider making something from the options below instead of plain old cereal and toast. It just might spice up your day!



SERVING	TIME	KCAL.	LEVEL
4	80 mins	82	easy

DIRECTIONS

1. Pour the rice into a rice cooker with broth and water, and bring the water level up to the "3 cup line". Reserve remaining liquid.
2. Set the rice cooker to the "porridge" setting; if there is no "porridge" setting, run it through one cycle. After the cycle is complete, lift the lid, stir, and continue to cook the porridge uncovered until thick and soupy.
3. While the rice is cooking, fill a medium sized bowl with ice and water and set aside. Bring a small pot of water to boil. Place the eggs in the water and boil for 6 minutes, then remove and plunge into the ice water bath.
4. Heat a small saucepan over medium heat. Add canola oil and heat until the oil is shimmering. Add the garlic, sauté until golden brown, then remove from heat.
5. Crack and peel your eggs, and add your desired toppings to your congee!

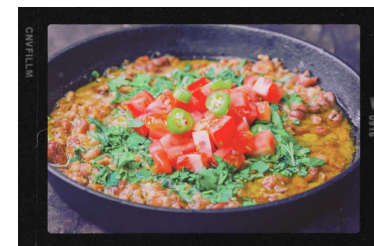
INGREDIENTS

Uncooked jasmine rice	2 cups
Chicken broth	2 cups
Water	4 cups
Scallions	2
Fresh cilantro	1 cup
Roasted peanuts	1/2 cup
Garlic cloves	2
Canola oil	2 tablespoons
Eggs	4

SERVING	TIME	KCAL.	LEVEL
5	25 mins	154	medium

DIRECTIONS

1. Drain fava beans and place in a deep skillet/saucepan. Heat over medium/high heat with 1/2 cup water. Season with light kosher salt and ground cumin and then remove from heat. Using the back of a fork, mash the beans.
2. Use a mortar and pestle to smash garlic and chilli peppers, then add lemon juice. Pour the sauce over the fava beans and stir, adding a generous amount of olive oil.
3. Top the ful medames with fresh parsley, diced tomatoes, and any other toppings you prefer. Serve with a warm side of pita bread and enjoy!



INGREDIENTS

Fava beans	2 cans/3 cups
Water	1/2 cup
Ground cumin	1/2 to 1 tsp
Kosher salt	
Crushed garlic	2 cloves
Chilli peppers	1 to 2
Fresh lemon juice	1 Large lemon
Extra virgin olive oil	
Parsley	1 cup
Diced tomatoes	1 tomato

To Serve:

Warm pit bread
Sliced tomatoes
Sliced cucumbers
Green onions
Olives

Congee

Ful medames

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