Episode Name: Making Waves – Synthetic Biology for All

Guests: Dr. Hill and Dr. Karas

Host: Shea Tough

[Podcast Script]

Host: Hello and welcome to the Making Waves podcast where we discuss everything wastewater and why you should care. My name is Shea Tough and today I am honored to have Dr. Hill and Dr. Karas, two of the leading biological and genetics scientists at Western University here in London Ontario. This podcast series is part of Western University's international genetically engineered machine team, or IGEM for short. This podcast came to life when the human practices team realized that not many people, or outsiders to the industry, have any idea how wastewater management works even though it is such a crucial part of our everyday lives we take for granted.

This episode is going to be less about wastewater and more about synthetic biology. For any new listeners Western iGEM is working on a synthetic biology project to remove pharmaceuticals and microplastics from wastewater, and in other episodes we explain the project in more detail. Since our entire project revolves around synthetic biology our team decided it was important to give our listeners an educational episode about synthetic biology and how the field is solving some of the world's most prominent problems. So get ready to learn about what synthetic biology is, how mature is the field and how much it is growing, some examples of problem solving with synthetic biology and how to get involved.

[Segment 1: Intros]

Host: Without further ado let's begin with finding out a little more about our guests today. Both our guests are Professors at Western University but let us know a little bit about yourselves, your research and position at Western.

Hill + Karas: explain credentials/ introduce themselves.

As per every episode we will now ask 5 speed rapid answer get to know you questions to our guest, I will go back and forth between you two, just answer as fast as possible

1. e.g. "Cake or Icecream?"
2. e.g. "Are you a morning or night person?"
3. Q3
4. Q4
5. Q5

And now onto the more educational side of the podcast!

[Segment 2: Defining the Field]

Question 1:

Host: Okay so let's assume that any new listeners do not know what synthetic biology is, how would each of you describe synthetic biology to them from your point of view? How did the field begin?

Guests: Each can give an answer/ add to each others ~5-7 min discussion

Question 2:

Host: I feel like a lot of people are kind of have this idea that syn bio and genetics are going to take over the world and make everything unnatural. Either of you can answer this, but what would you say to the people about the direction syn bio research is taking to maybe give them some peace of mind, or maybe at least explain a little better to people who are skeptical?

Guests: Answer + Discussion ~5-7 mins

[Segment 3: Real World Examples]

Question 3:

Host: Previous question kind of segues into this one but I remember talking to some friends in synthetic biology class and discussing all the cool companies and applications of synthetic biology. With IGEM alone there are hundreds of teams working with the core idea to solve a problem with syn-bio. Some applications are already rolled out like the meatless burger or spider silk but some companies have crazy goals like using jelly-fish bioluminescence to replace street lights or genetically engineered mannequin babies. Seeing how the field is still relatively young, how feasible do you think ideas like these or others are?

[discuss other possible applications such as biosensors, biological computers, disease treatment etc.]

Guests: Answer + Discussion up to 10 mins

[Segment 4]

Host: Let's say I hear all this and want to do some of my own research or leap into the field. How would I go about getting involved? It would be good to get some direction for different groups of people so let's start with high school students and then students that are already enrolled in university but ranging from first year students that are graduating soon.

[time permitting possibly ask about research funding and the job market]

Guest: Mentions any programs/organizations/ websites etc. for general listeners or highschool students and then specify to Western listeners about WSBR/Syn Bio degree or anything you want.

[Segment 5: Wrapping Up]

Host: This was so great, thank you so much, we really appreciate your time to come and talk to Western IGEM and we hope our listeners learned a thing or two. If anyone is looking for more information or has any questions, contact e-mails and links will be in this podcast description or you can follow us on instagram @western_igem. Until then, Stay Wavy!

Episode Name: Wastewater 101

Guest: Gary Burrows

(Supervisor of operations, City of London waster water division. President of Water Environment Association of Ontario)

Host: Shea Tough

[Podcast Script]

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Without further ado, today we will be speaking with Gary Burrows. Gary has been in the wastewater industry for ___ years. For anyone listening , you should get ready to learn the low down about what happens after we flush, how wastewater treatments work and what would happen without it. Welcome Gary tell us a little about yourself.

[Segment 1: Intros]

As per every episode we will now ask 5 speed rapid answer get to know you questions to Gary, are you ready?

1. Endless Tacos or endless sushi?
2. Favorite colour?
3. Would you rather live with no shower or no toilet?
4. Icecream or cake?
5. Favourite TV show?

Okay and now into the educational part of our podcast.

[Segment 2: Main Question]

1. So to hop right into our first question, for many people the water they use on a daily basis is not thought about after it goes down the drain. We have learned so far that water does not magically disappear after you flush or run it, it is delicately cared for and processed. Could you walk us through a short form version of what happens to water after it is used in a household?

Gary Answer: Longest Answer of Podcast: Approximately 5-10 Mins, + discussion or follow-up questions (5 mins)

Quick Questions:

2. To get a scale for how much water is being processed, how many tonnes of water flow through Greenway a day?

3. Greenway is the largest plant in London, how many people work here to keep the plant running smoothly 24/7?

4. You mentioned the water effluent is flushed back into rivers, streams etc. who tests or makes the regulations for that water to make sure it is safe?

5. Is there anything you wish the public knew to make the treatment process easier?

6 What would happen if all the wastewater treatment plants shut down?

7. If Gary wants we can ask about any summer programs/ work study/ hiring opportunities etc.

[Segment 3: Wrapping Up]

- This was so great thank you so much, if anyone is looking for more information or has any questions, e-mails and links will be in this podcast description or you can follow us on instagram @western_igem. Until then, Stay Wavy!

Episode: Making Waves – iGem Who?

Guests: Luana, Meet, Lauren and Husnain

(Team Leads for iGem Western_Canada)

Host: TBD

[Podcast Script]

Host: You are listening to Making Waves. A podcast series by Western University's iGem team and this is episode #, [Name of episode]. My name is [host name] and today I am excited to have Meet, Lauren, Luana and Husnain with us from the iGem team. *introduce each persons position within the team*. In todays episode we will get the team, how it came together and the project on hand.

[Segment 1, iGem and our project]

Host: So Luana, could you tell us about what iGem is and how you got introduced to it?

Follow up questions:

- What is our project (overview of the project)?
- Why is it important to tackle the issue at hand?
- *Ask about where the HQ is, where the competition takes place. Do we need mentors? Ask about funding and how we got it?*

Answer:

[Segment 2: different components]

Host: Now we have found out about igem we will dig deep into different components of iGem. Here we have wet lab, dry lab and human practices. So lets begin with wet labs, how many team members do you have and what do you guys d?

Answer:

Host to another team lead: now let's talk about dry labs, what do you do and how does that differ from wet lab's work?

Answer

Host: last but not least, where does human practices fits in all this?

Answer:

[Segment 3: pros and cons]

Host: So we will be closing off soon and I would like to know what is your most favourite part of the department and what is the worst?

Answer:

[Segment 3: Wrapping Up]

Host: - This was so great thank you so much, if anyone is looking for more information or has any questions, e-mails and links will be in this podcast description or you can follow us on instagram @western_igem. Until then, Stay Wavy!

Episode Name: Where does the government stand?

Interviewer: TBD

Guest: Councillor on the Thames river or with environmental board memberships; most are on the wastewater management board.

[Podcast Script]

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Without further ado, today we will be speaking with City of London Councillor of Ward ___, <name>. For anyone listening, today we will be discussing wastewater from the perspective of someone who has the interest of the greater good of community in mind, how a regular household can get involved in making change for the better and the impact progressive thinking to problem solve for neighbourhoods. Welcome <name> tell us a little about yourself.

[Segment 1: Intros]

As per every episode we will now ask 5 speed rapid answer get to know you questions to <name> are you ready?

1. Biggest pet peeve?
2. Favourite movie?
3. If you could only eat one thing for the rest of your life what would it be?
4. Favourite school subject?
5. One place you would like to travel to?

Okay and now onto the discussion!

[Segment 2: Main Questions]

1. You are part of <name boards/conservation memberships etc.>. As we have explained on the podcast our project involves removing EC's in wastewater effluent flowing into Thames river. For someone who has no previous knowledge like myself, what exactly are the committees/ organizations you are on in place for? And what are some current efforts being made to promote change?

<follow-up questions/ discussion pending discussion>

2. From your vantage point as councillor of ward ____, have any citizens of London from your ward ever brought up water pollution, conservation of Thames River or anything related to wastewater management? Or is it just an issue that you think doesn't cross the average person's mind?

3.What can the average household do to help with the types of issues surrounding water management and the environment? Do you think the public should be more aware of these issues?

4. Are there any resources from the City of London specific to yourself or wastewater that you would like so shine light on?

[Segment 3: Wrapping Up]

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Episode Name: How “clean” water could be making you sick?

Guests: TBD

Host: TBD

[Podcast Script]

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[Segment 1: Intros]

So before we get things started, let’s do 5 quick rapid answer questions to get to know you. Ready?

1. What superpower would you want to have?
2. Favorite pizza topping?
3. Ketchup or mustard?
4. would you rather travel 1000 years into the future or 1000 years into the past?
5. Aisle seat or window?

[Segment 2: Main Questions]

Interviewer: Ok so, [guest], can you tell us what Personal care products are and how they’re ending up in our water?

So these chemicals don’t get filtered out of our waste-water and end up in the water we drink. What impact do they have on our health?

What concentration of these compounds in the water is safe for people to be drinking?

What would you recommend for people who are concerned about what they’re drinking and the chemicals they’re ingesting?

What can people do to reduce the amount of wastewater they produce and the personal care products and pharmaceuticals that they add to the water?

[Segment 3: Wrapping Up]

This was so great thank you so much, if anyone is looking for more information or has any questions, e-mails and links will be in this podcast description or you can follow us on instagram @western_igem. Until then, Stay Wavy!

Episode name: There's plenty of fish in the sea!

Guest: TBD emailed Thames River Conservation Authority

Host: TBD

[Podcast Script]

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[Segment 1: Intros]

So before we dive into our discussion, let's do 5 quick questions to get to know you a bit better. Ready?

1. Would you rather always be 1 hr early or 1 hr late to everything?
2. Hot dogs or hamburgers?
3. Are you a cat person or a dog person?
4. If you could go anywhere in the world right go, where would you want to go?
5. Favourite restaurant?

[Segment 2: Main Questions]

Lets begin! [guest]. Can you start us off by outlining what some of the compounds we're concerned about are, and how they're impacting the organisms which live in the water?

What is the larger impact on the environment/ecosystem?

What is the City currently doing to maintain the ecosystem of the Thames river?

How does the health of the Thames river affect other bodies of water further downstream?

I've read stories about fish spontaneously changing sex or alligators who are addicted to drugs. Can this actually happen? How?

What advice do you have for people who are concerned about the environmental impact of emerging contmainants? How can they reduce their individual wastewater footprints?

[Segment 3: Wrapping Up]

- This was so great thank you so much, if anyone is looking for more information or has any questions, e-mails and links will be in this podcast description or you can follow us on instagram @western_igem. Until then, Stay Wavy!

Episode Name: Let's find out how much you guys know?

Guests: Interviewing people on the streets or inviting random people in the building.

Host: TBA (teams of two)

[Podcast Script]

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[If going out]
Today we will take a step out of our lab to interview random people on the street and see if they really know what's been happening with their drinking water. Let's go!

OR

[If inviting people in]
Today we have invited people off the street to our lab and we are going to quiz them to see their understandings of their own tap water.

[Interview 3 or more people and ask them the same questions]

Host: (ask them their name and their educational background)
e.g. what is your name and tell us a little bit about yourself

[Question Period]

1. Do you know how waste water get filtered? Can you briefly explain the process?

   Material that does not pass through screens is removed and hauled to the landfill. Suspended solids are removed in large settling tanks (primary treatment). In secondary treatment, bacteria are grown to break down organic material in the aeration section.The treated wastewater is disinfected using ultra-violet light (during the disinfection period) and released to the Thames River.

2. What types of chemicals get into our water and do you know how they can be harmful?

   Well there are many chemicals in our waste water. But the one we are most concerned with is microplastics. They are these tiny plastics debris resulting from disposal and breakdown of consumer products and they get into our drinking water easily.

These plastics can be injected by animals, such as fish, and eventually accumulate because they cannot be broken down. Animals in our food chain can also be found being contaminated with these.

[Explanation Period]

Host: (give a quick summary to answer the question 1 and 2)

Do you think the current public is aware of any of these?

If no: Why do you think they are not aware of this?

If yes: How do you think we can improve our knowledge and what is a way of doing it?

Host: So, our lab is currently creating manmade micro-organisms to help filter out the tiny plastics in our water. What are your thoughts on using these organisms to filter?

[Conclusion]

Host: Thank for your participation today, if you are looking for more information or has any questions, e-mails and links will be in this podcast description or you can follow us on instagram @western_igem. Until then, Stay Wavy!