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Title: Evolving the next generation of algal crops

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Evolving the next generation of algal crops

Jennifer T. Pentz

B-GEN Genomics and Bioanalytics

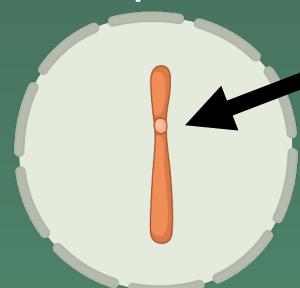
June 28, 2023



Problem: Algae we use now is not productive enough

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Algae are
haploid



1N

Only one copy
of genome



Problem: Algae we use now is not productive enough

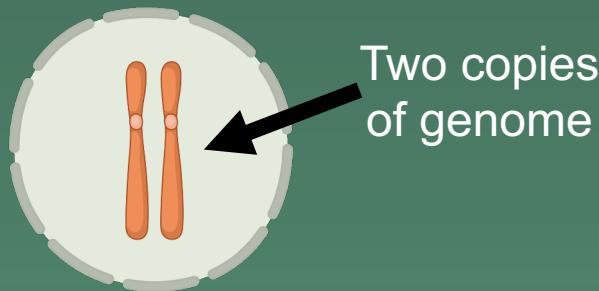
Algae are
haploid



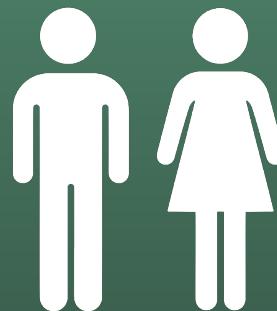
1N



Humans are
diploid



2N



Problem: Algae we use now is not productive enough

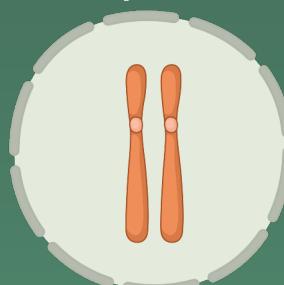
Algae are haploid



1N



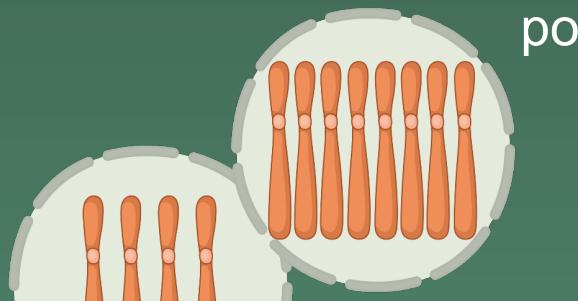
Humans are diploid



2N



Plants are polyplloid



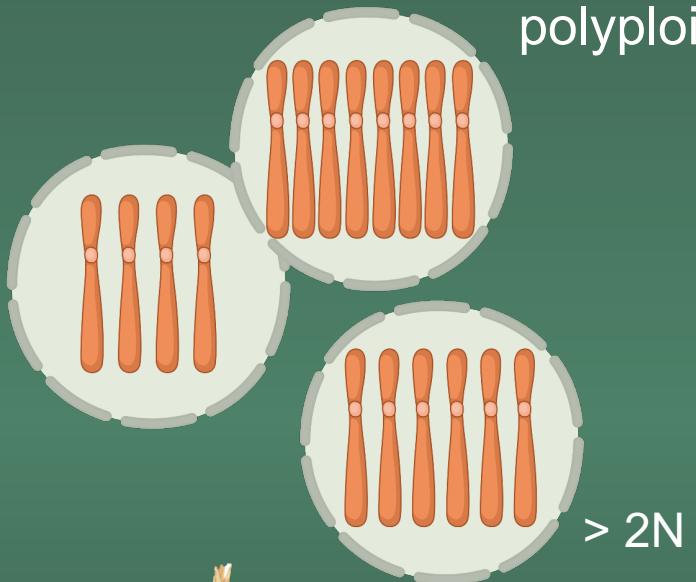
> 2N

More than two copies of genome



In nature, polyploidy helped plant crops domesticate

Plants are
polyploid



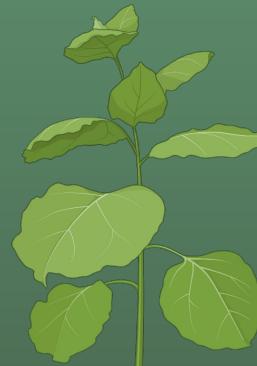
In nature, polyploidy helped plant crops domesticate

2N



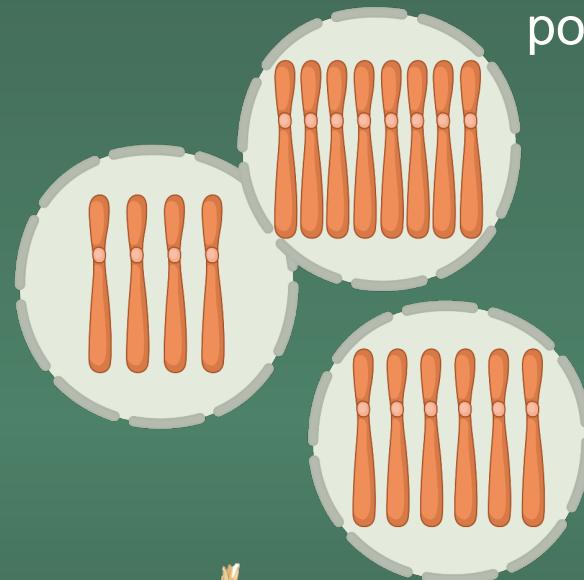
>2N

Grow faster and larger, higher yield



Increased stress tolerance

Plants are polyploid



> 2N



Doubling the genome of algae in the lab

Remember back to biology...

Normal cell division



Doubling the genome of algae in the lab

Remember back to biology...

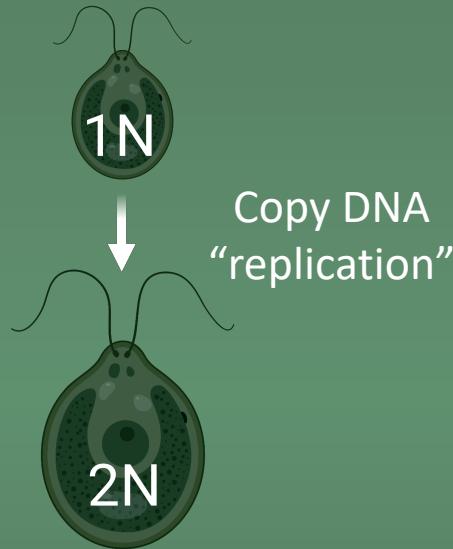
Normal cell division



Doubling the genome of algae in the lab

Remember back to biology...

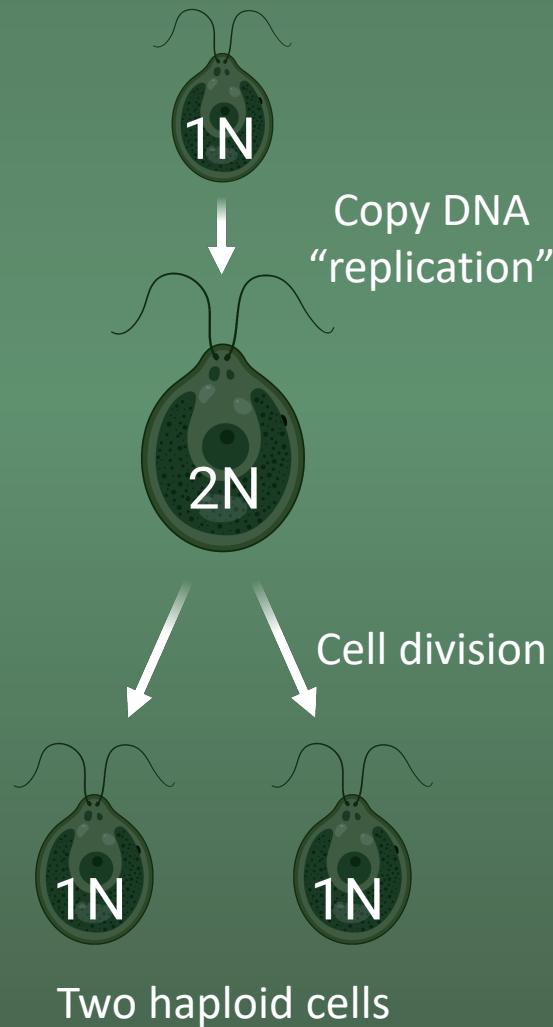
Normal cell division



Doubling the genome of algae in the lab

Remember back to biology...

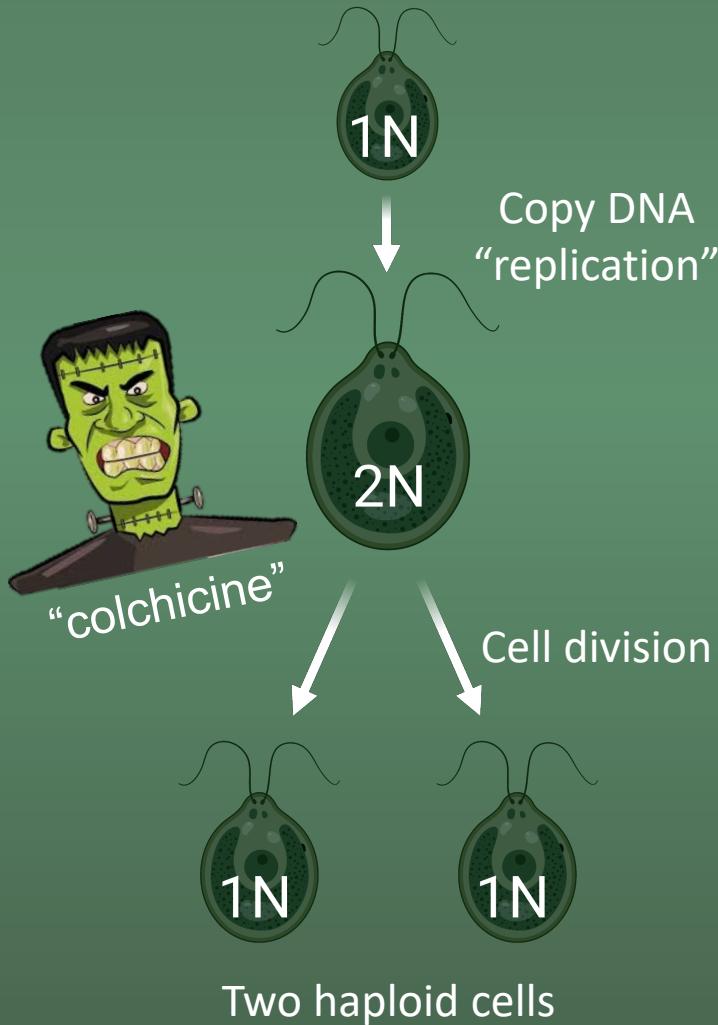
Normal cell division



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Remember back to biology...

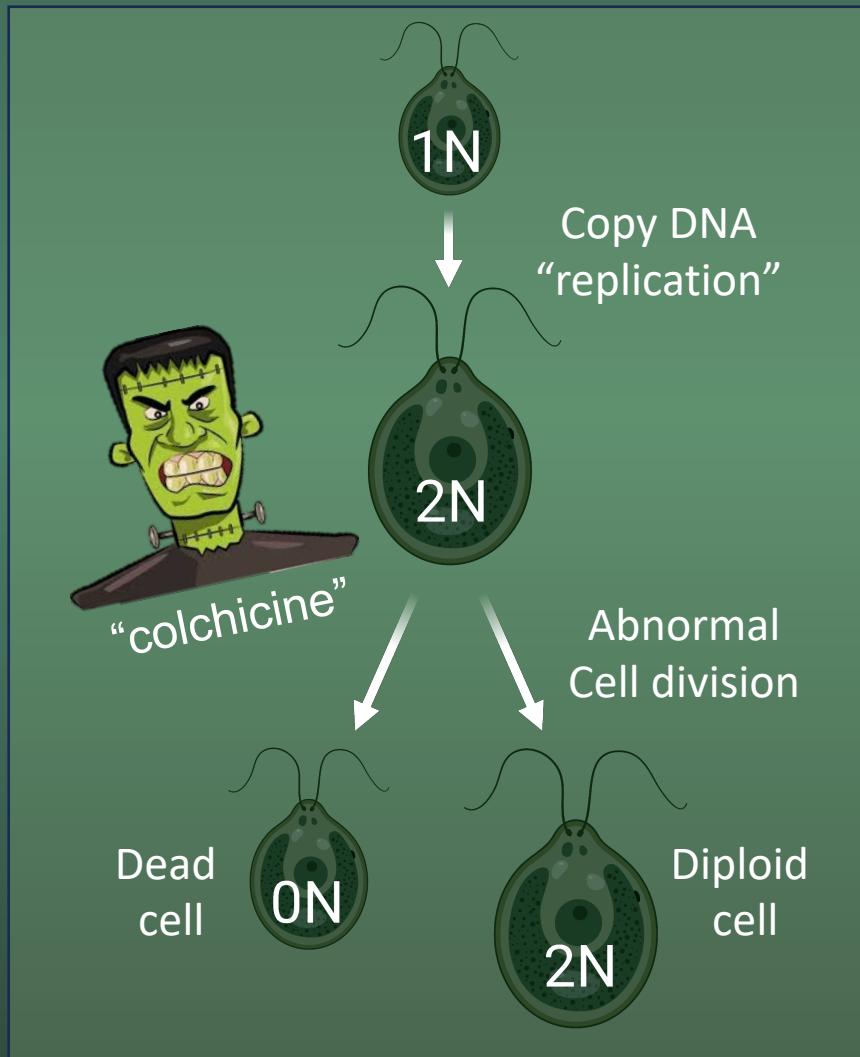
Normal cell division



Doubling the genome of algae in the lab

Remember back to biology...

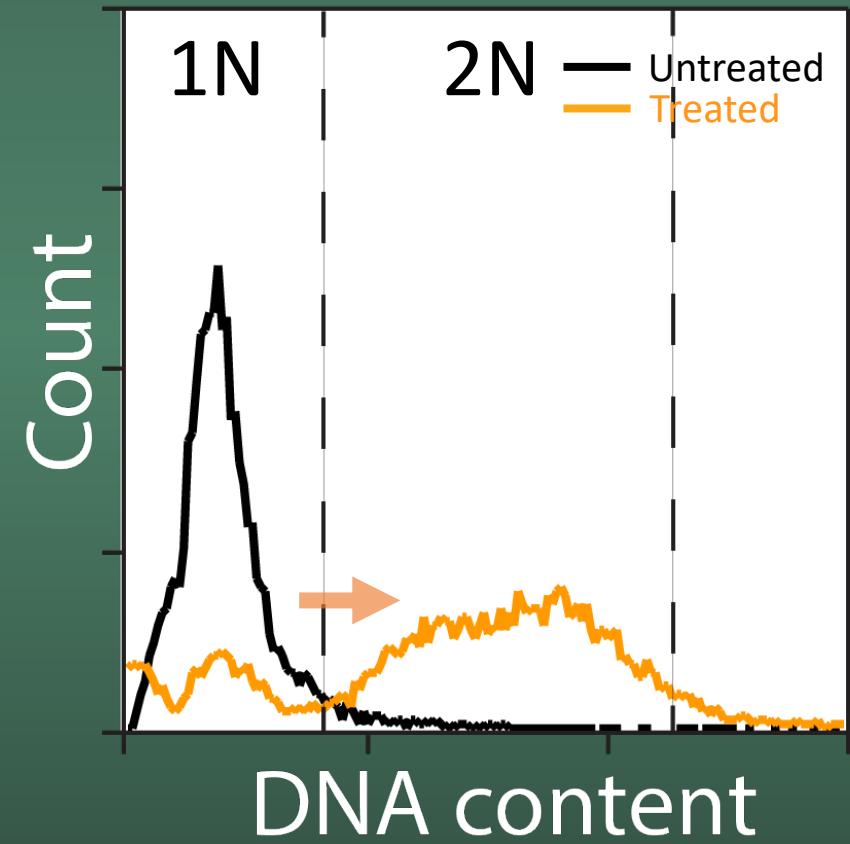
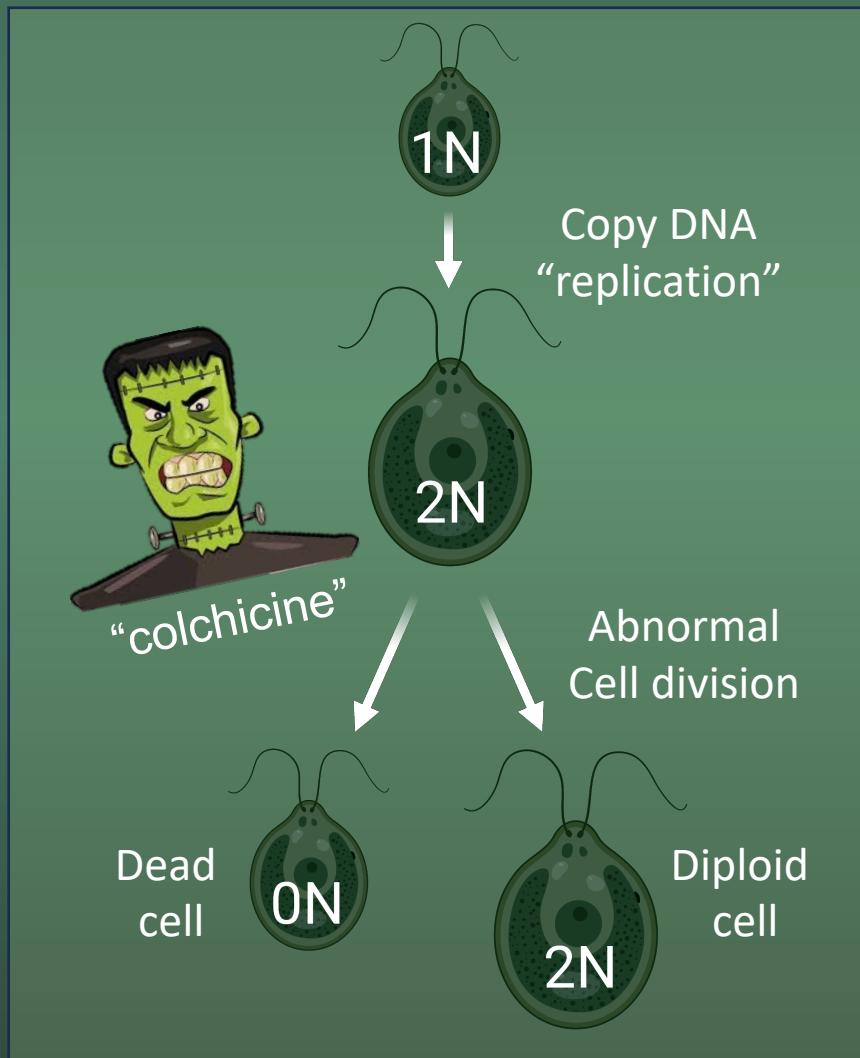
Normal cell division



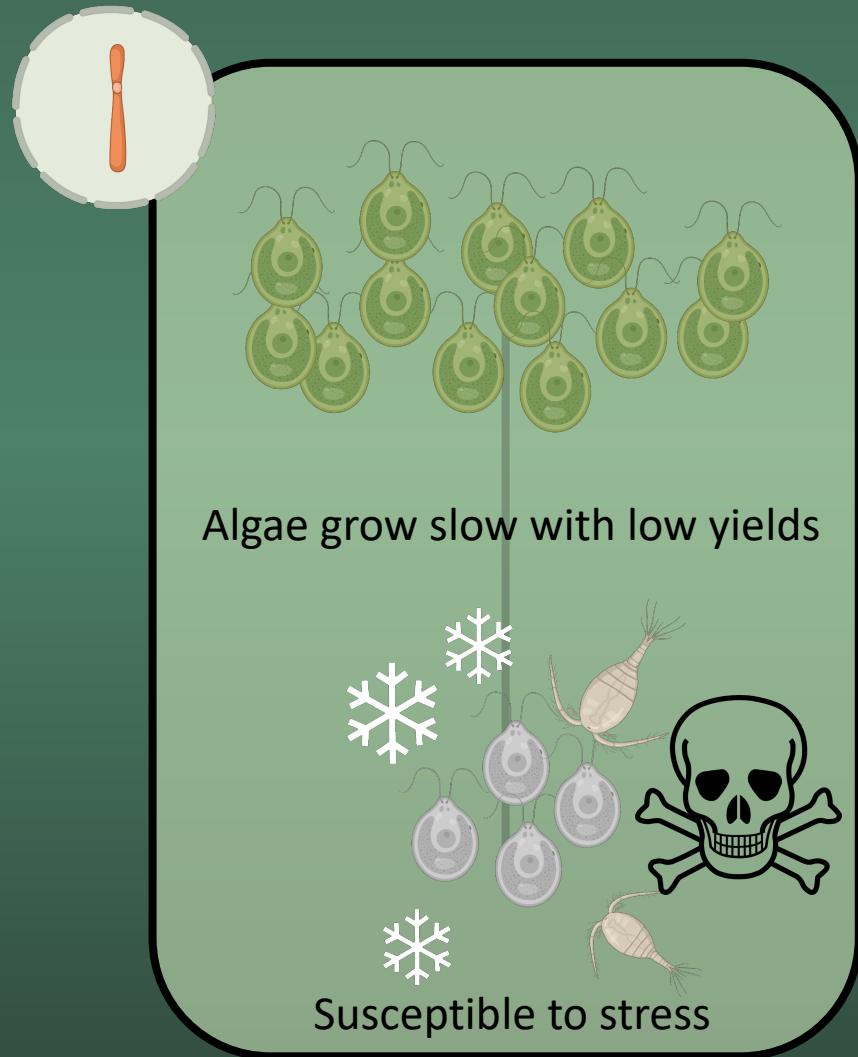
Doubling the genome of algae in the lab

Remember back to biology...

Normal cell division



Diploid algae can make algae ponds stronger and more resilient





Thank you!



Erik R. Hanschen



Claire Sanders



Omar Holguin

- Claudia Galvan
- Harmanpreet Kaur

