

Oligonucleotide probes for detection of *Dinophysis* species (Dinophyta)

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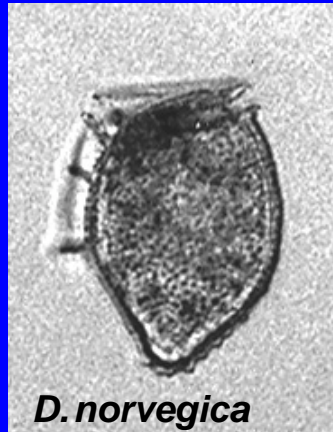
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Objective

Develop oligonucleotide probes
for toxic *Dinophysis* species



Oligonucleotide probe development

1. Obtain DNA sequences (SSU rDNA, 1-2 cells PCR)
2. Align with sequences from databases (>350)
3. Design probes using software packages (ARB, RDP, BLAST, Oligo)
4. Test probe specificity (dot blot hybridization)



D. acuta



D. norvegica



D. acuminata



D. rotundata

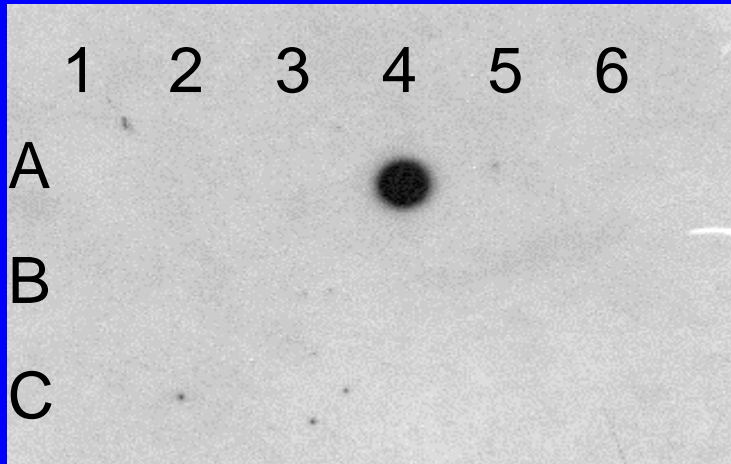
Distance values (right) and absolute number of nucleotide differences (left).

	<i>D. acuminata</i>	<i>D. acuta</i>	<i>D. norvegica</i>	<i>D. rotundata</i>
<i>D. acuminata</i>	0	0.004	0.003	0.031
<i>D. acuta</i>	8	0	0.003	0.031
<i>D. norvegica</i>	6	5	0	0.029
<i>D. rotundata</i>	55	56	53	0

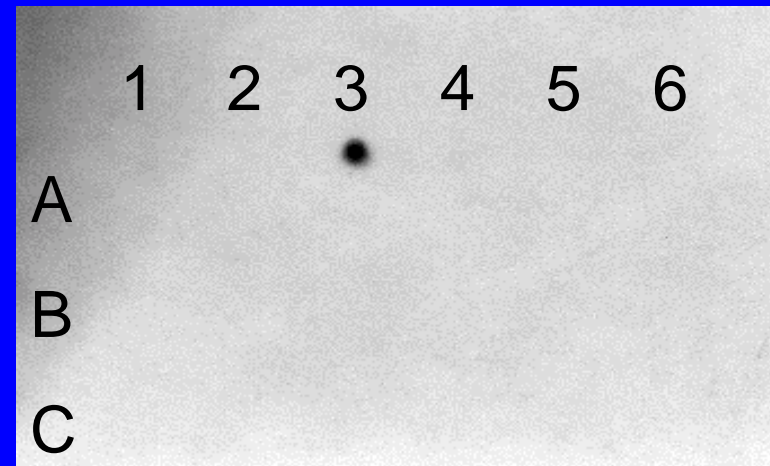
Number of mismatches between probes and target / non-target rDNA

Species	Probe	Dinophy A5	Dinophy G6	Dacum B2	DacutB	DnorvB	DrotG
<i>D. acuminata</i>		0	0	0	3	2	1
<i>D. acuta</i>		0	0	3	0	3	4
<i>D. norvegica</i>		0	0	1	3	0	2
<i>D. rotundata</i>		0	3	2	3	1	0
<i>K. mikimotoi</i>		1		4	4	2	2
<i>P. micans</i>		1		5	5	2	2
<i>P. lima</i>		1	5	5	5		5
<i>Scrippsiella</i>		1		5	4	2	5
<i>P. thyrrenicum</i>		1		4	4		2

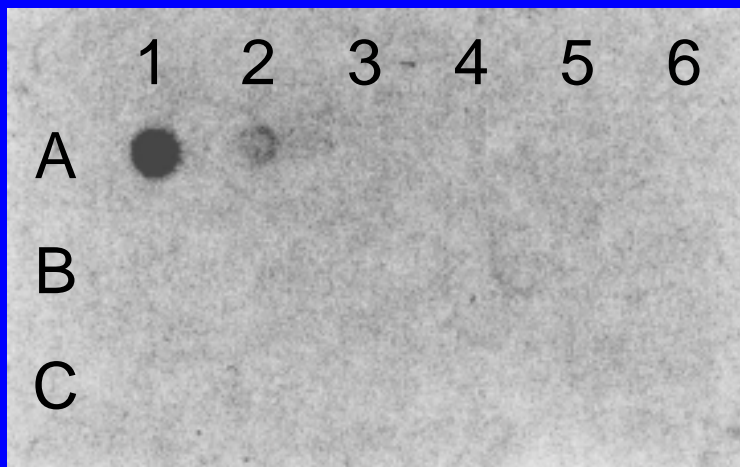
Probe for *D. acuminata*



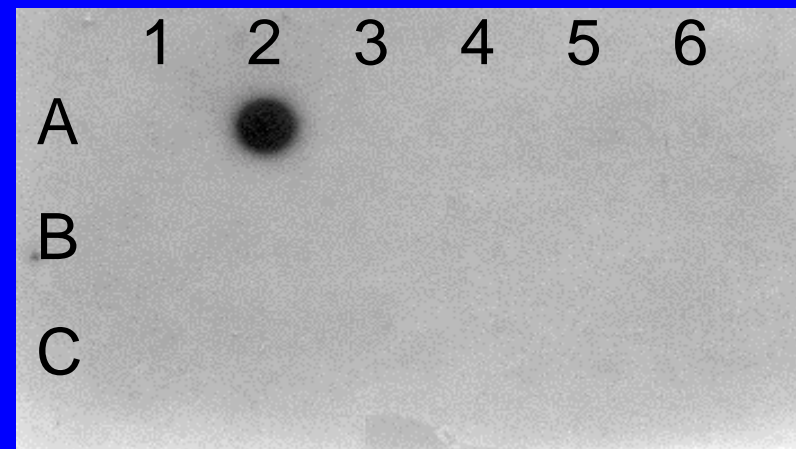
Probe for *D. acuta*



Probe for *D. norvegica*



Probe for *D. rotundata*



Future perspectives

- Test the probes with whole cells by FISH
- Use probes to detect and quantify toxic *Dinophysis* cells
- Use probes to clarify species delineation