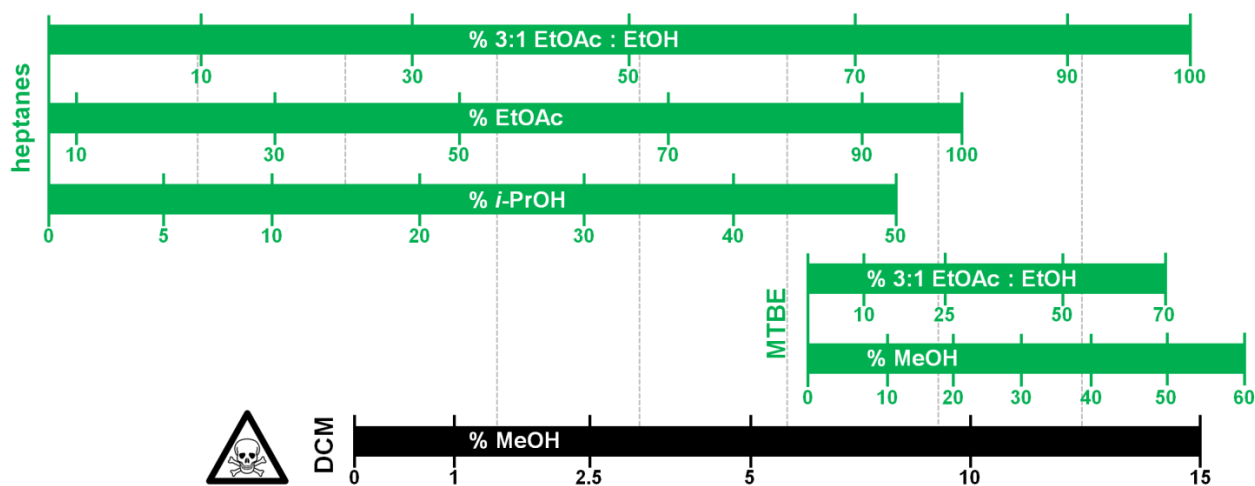
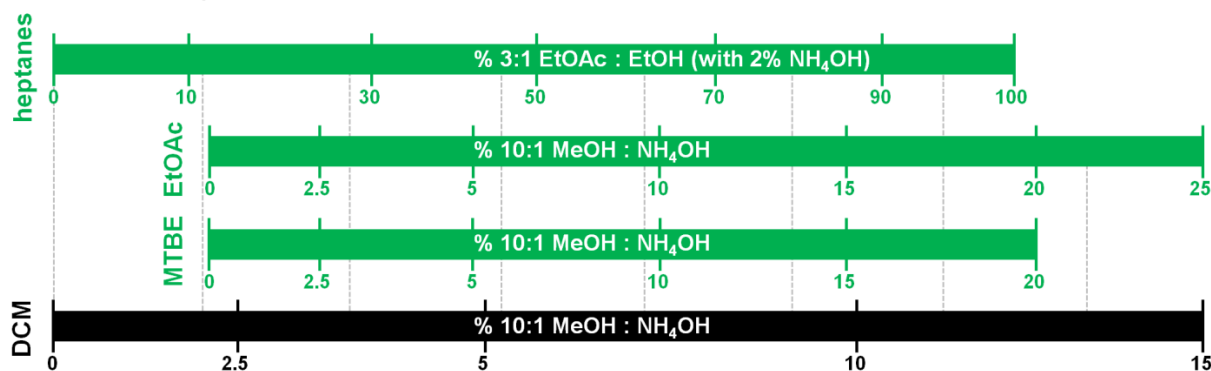


## Relative Eluting Strengths of Green Chromatography Solvent Mixtures

### Neutral Compounds



### Basic Compounds



### Acidic Compounds

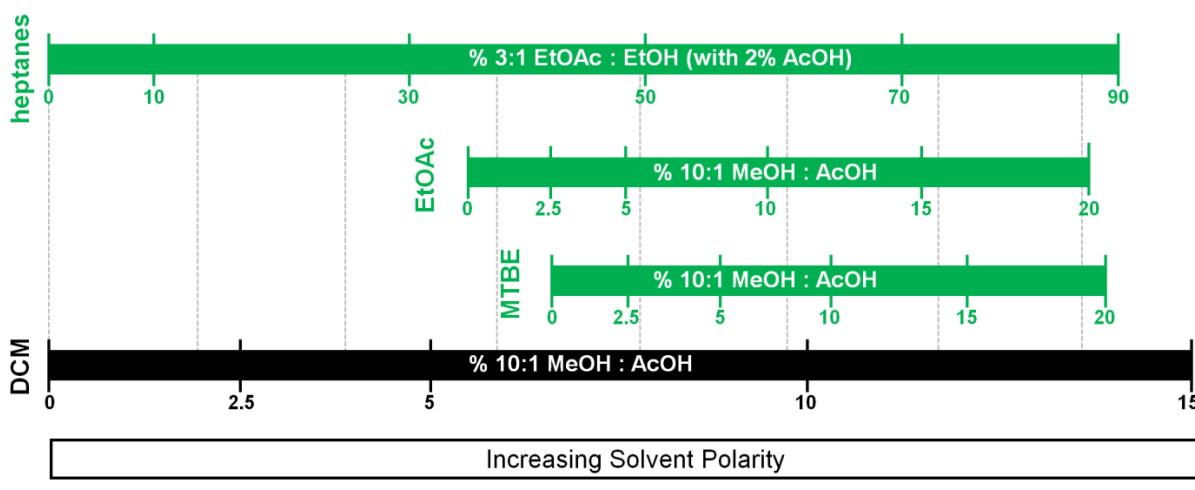


Figure 4. **Green Chromatography Solvent Selection Guide.** Starting from the appropriate DCM/MeOH concentration, compare vertically across the bar chart to identify greener solvent mixtures of similar eluting ability. For example, if a compound suitably elutes in 5% DCM/MeOH in the absence of an additive, the “Neutral Compounds” bar chart predicts that 60% 3:1 EtOAc:EtOH in heptanes or 40% of *i*-PrOH in heptanes would be suitable starting points to evaluate greener solvent alternatives.

## A Convenient Guide for the Selection of Green Chromatography Solvents

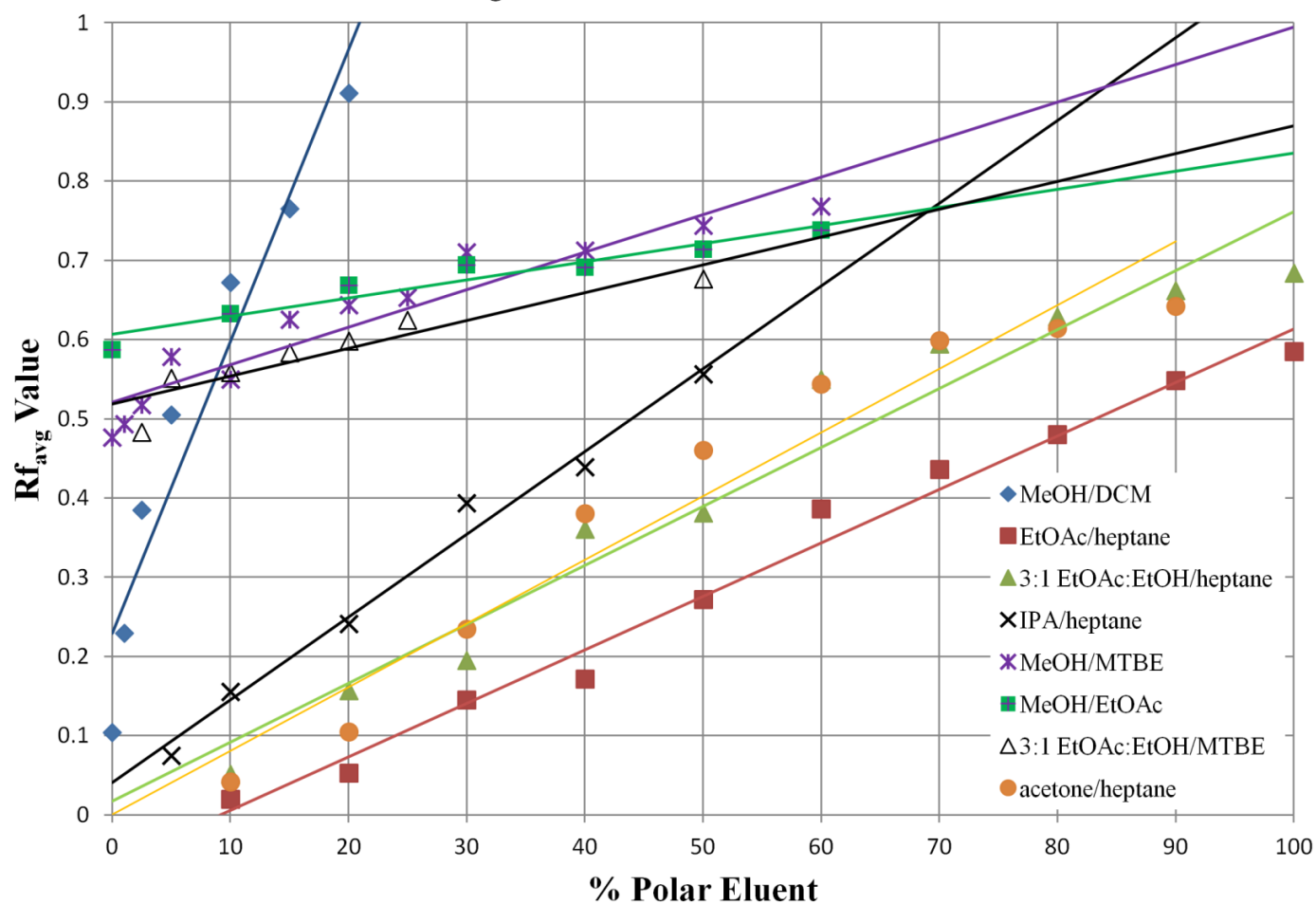
### Rf Analysis Method:

The relative eluting strength of a particular solvent mixture was determined by TLC analysis of the test compounds. To do this, all compounds within a subset were spotted in parallel on a single TLC plate (silica gel 60, size: 20 x 20 cm, 250  $\mu$ m thickness, Analtech) by capillary tube, and the compound set was eluted to a height of 15–17 cm with a specific solvent mixture. The compounds were visualized under UV light ( $\lambda$  = 254 nm). Neutral compounds were tested in the neutral solvent systems, basic compounds were tested in solvent systems modified with  $\text{NH}_4\text{OH}$  and the acidic compounds were tested in solvent systems modified with AcOH (Table S1). The retention frequency ( $R_f$ ) value was measured and tabulated for each individual compound (See Tables S2–S9). Then, the individual  $R_f$  values were averaged to give an average retention frequency ( $R_{f_{\text{avg}}}$ ) value for the compound set in that specific solvent mixture. Solvent mixtures were systematically evaluated at varying concentrations of polar eluent. The resulting  $R_{f_{\text{avg}}}$  values were plotted against solvent concentration and linear regression lines were fitted to the data (Fig 2). These regression lines were used to compare the relative eluting abilities of each solvent system (Figures S1–S3).

**Table S1.** Solvent Mixtures Tested

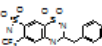
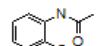
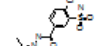
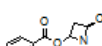
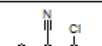
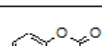
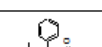
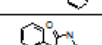
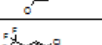
Neutral Solvent Combinations		
Non-polar	Polar	Measurements (% Polar Eluent)
CH <sub>2</sub> Cl <sub>2</sub>	MeOH	0, 1, 2.5, 5, 10, 15, 20
EtOAc		0, 10, 20, 30, 40, 50, 60
MTBE		0, 1, 2.5, 5, 10, 15, 20, 25, 30, 40, 50, 60
		3:1 EtOAc: EtOH
Heptane	EtOAc	0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
	3:1 EtOAc: EtOH	
	Acetone	5, 10, 20, 30, 40, 50
	<i>i</i> PrOH	
Basic Solvent Combinations (doped with NH <sub>4</sub> OH)		
CH <sub>2</sub> Cl <sub>2</sub>	10:1 MeOH:NH <sub>4</sub> OH	2.5, 5, 10, 15, 20
MTBE		1, 2.5, 5, 10, 15, 20
EtOAc		1, 2.5, 5, 10, 15, 20, 25
Heptane	3:1 EtOAc: EtOH (2% NH <sub>4</sub> OH)	20, 30, 40, 50, 60, 70, 80, 90, 100
Acidic Solvent Combinations (doped with AcOH)		
CH <sub>2</sub> Cl <sub>2</sub>	10: 1 MeOH:AcOH	1, 2.5, 5, 10, 15, 20
MTBE		
EtOAc		
Heptane	3:1 EtOAc: EtOH (2% AcOH)	20, 30, 40, 50, 60, 70, 80, 90, 100

## Comparison of $R_{f,avg}$ Values in Neutral Solvent Systems

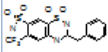
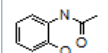
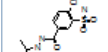
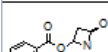
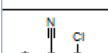
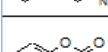

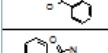
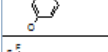


**Figure S1.**  $R_{f,avg}$  values for the neutral compound set tested in neutral solvent systems at increasing concentrations of polar eluent. Linear regression lines can be used to compare relative solvent eluting strength at different solvent concentrations.

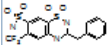
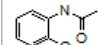
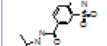
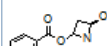
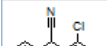
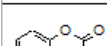

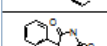
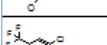
Supporting Information  
Taygerly, Miller, Yee and Peterson  
**Table S2.** Individual R<sub>f</sub> values for neutral compounds tested in EtOAc/heptanes and 3:1 EtOAc:EtOH in heptanes

Compound	EtOAc in heptanes											3:1 EtOAc:EtOH in heptanes									
	100 % Heptane	10% EtOAc in heptanes	20% EtOAc in heptanes	30% EtOAc in heptanes	40% EtOAc in heptanes	50% EtOAc in heptanes	60% EtOAc in heptanes	70% EtOAc in heptanes	80% EtOAc in heptanes	90% EtOAc in heptanes	100 % EtOAc	10% (3:1 EtOAc:EtOH) in heptanes	20% (3:1 EtOAc:EtOH) in heptanes	30% (3:1 EtOAc:EtOH) in heptanes	40% (3:1 EtOAc:EtOH) in heptanes	50% (3:1 EtOAc:EtOH) in heptanes	60% (3:1 EtOAc:EtOH) in heptanes	70% (3:1 EtOAc:EtOH) in heptanes	80% (3:1 EtOAc:EtOH) in heptanes	90% (3:1 EtOAc:EtOH) in heptanes	100% 3:1 EtOAc:EtOH
	0	0	0	0.04	0.07	0.2	0.39	0.47	0.53	0.6	0.66	0	0.06	0.11	0.31	0.35	0.55	0.63	0.63	0.71	0.73
	0	0	0.02	0.09	0.11	0.18	0.28	0.33	0.37	0.44	0.49	0.02	0.12	0.17	0.31	0.3	0.5	0.54	0.58	0.61	0.63
	0	0	0	0.04	0.06	0.16	0.31	0.38	0.46	0.55	0.61	0	0.07	0.12	0.3	0.32	0.52	0.59	0.62	0.68	0.7
	0	0	0.04	0.12	0.15	0.25	0.35	0.4	0.44	0.51	0.54	0.05	0.17	0.21	0.36	0.39	0.54	0.58	0.62	0.64	0.67
	0	0.03	0.07	0.22	0.24	0.36	0.46	0.51	0.54	0.59	0.62	0.07	0.2	0.24	0.4	0.43	0.57	0.61	0.65	0.67	0.69
	0	0.08	0.15	0.28	0.3	0.4	0.47	0.51	0.53	0.57	0.59	0.15	0.26	0.29	0.42	0.44	0.57	0.59	0.63	0.65	0.67
	0	0.02	0.04	0.15	0.18	0.3	0.42	0.47	0.51	0.58	0.6	0.05	0.16	0.2	0.37	0.4	0.55	0.6	0.62	0.66	0.68
	0	0	0.02	0.03	0.06	0.1	0.23	0.26	0.33	0.46	0.5	0	0.07	0.08	0.28	0.28	0.51	0.55	0.62	0.64	0.67
	0	0.05	0.14	0.35	0.39	0.52	0.6	0.63	0.65	0.68	0.7	0.13	0.31	0.35	0.52	0.55	0.67	0.69	0.72	0.73	0.74
Average (R <sub>f</sub> <sub>ave</sub> )	0.00	0.02	0.05	0.15	0.17	0.27	0.39	0.44	0.48	0.55	0.59	0.05	0.16	0.20	0.36	0.38	0.55	0.60	0.63	0.67	0.69

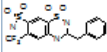
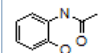
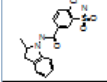
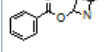
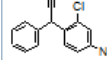
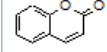
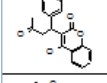
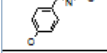
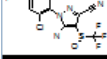
Supporting Information  
Taygerly, Miller, Yee and Peterson  
**Table S3.** Individual R<sub>f</sub> values for neutral compounds tested in *i*-ProH/heptanes and acetone/heptanes

Compound	i-ProH in heptanes						Acetone in heptanes									
	5% i-ProH in heptanes	10% i-ProH in heptanes	20% i-ProH in heptanes	30% i-ProH in heptanes	40% i-ProH in heptanes	50% i-ProH in heptanes	10% acetone in heptanes	20% acetone in heptanes	30% acetone in heptanes	40% acetone in heptanes	50% acetone in heptanes	60% acetone in heptanes	70% acetone in heptanes	80% acetone in heptanes	90% acetone in heptanes	100% acetone
	0	0.05	0.14	0.35	0.42	0.58	0	0.03	0.09	0.24	0.38	0.52	0.59	0.62	0.67	0.7
	0.03	0.1	0.13	0.35	0.4	0.52	0.03	0.1	0.22	0.38	0.43	0.52	0.56	0.58	0.61	0.64
	0	0.07	0.15	0.35	0.4	0.55	0	0.04	0.13	0.29	0.4	0.51	0.59	0.62	0.65	0.68
	0.1	0.19	0.28	0.4	0.45	0.54	0.04	0.1	0.25	0.41	0.47	0.54	0.59	0.6	0.63	0.65
	0.07	0.14	0.23	0.35	0.4	0.5	0.05	0.13	0.3	0.46	0.53	0.59	0.64	0.65	0.66	0.68
	0.18	0.26	0.33	0.42	0.46	0.55	0.15	0.22	0.38	0.52	0.57	0.61	0.64	0.64	0.64	0.66
	0.09	0.19	0.3	0.44	0.48	0.59	0.04	0.12	0.28	0.43	0.51	0.58	0.62	0.62	0.65	0.66
	0.03	0.09	0.2	0.38	0.4	0.55	0	0.03	0.09	0.17	0.29	0.39	0.51	0.54	0.59	0.64
	0.18	0.32	0.43	0.53	0.57	0.66	0.07	0.18	0.39	0.55	0.59	0.67	0.68	0.69	0.71	0.73
Average (R <sub>f_ave</sub> )	0.08	0.16	0.24	0.40	0.44	0.56	0.04	0.11	0.24	0.38	0.46	0.55	0.60	0.62	0.65	0.67

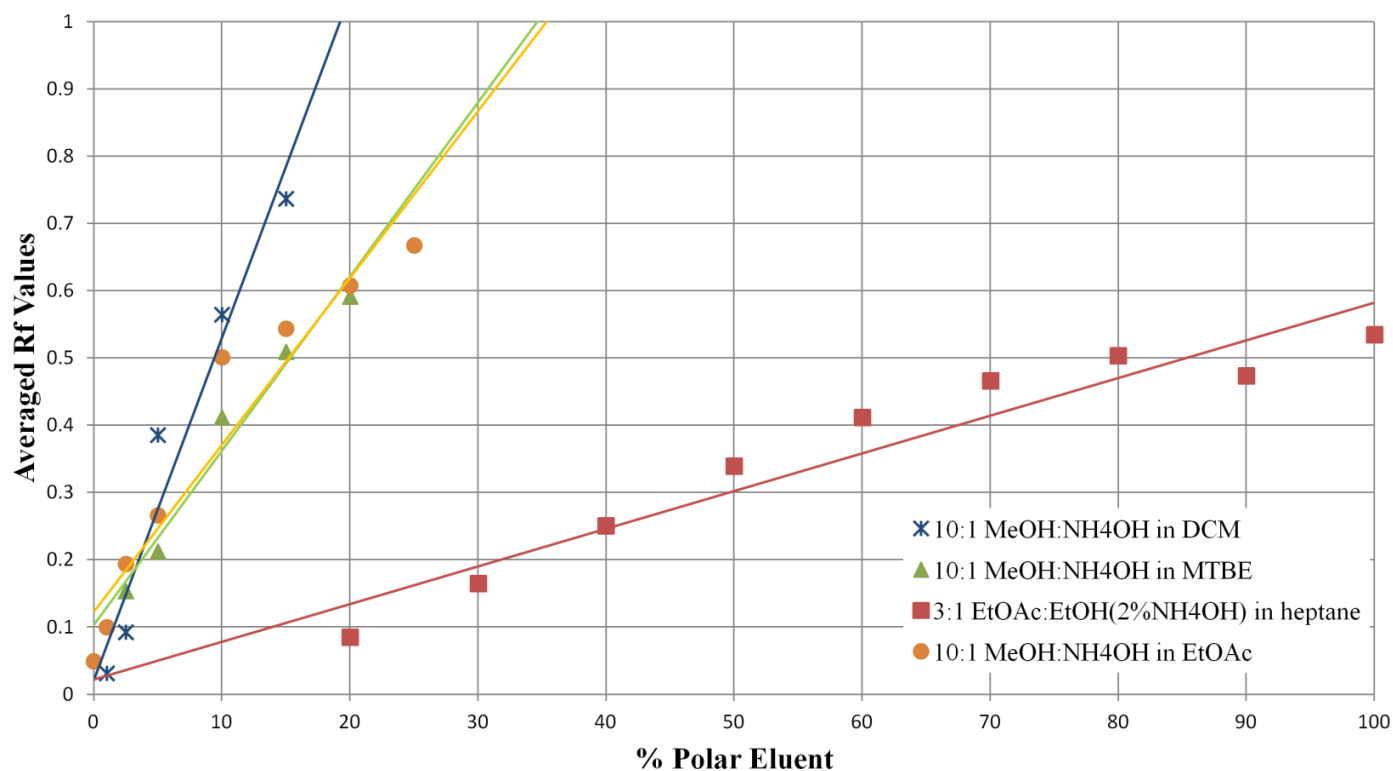
Supporting Information  
Taygerly, Miller, Yee and Peterson  
**Table S4.** Individual R<sub>f</sub> values for neutral compounds tested in MeOH/DCM and MeOH/EtOAc

Compound	MeOH in DCM							MeOH in EtOAc						
	100% DCM	1% MeOH in DCM	2.5% MeOH in DCM	5% MeOH in DCM	10% MeOH in DCM	15% MeOH in DCM	20% MeOH in DCM	100 % EtOAc	10% MeOH in EtOAc	20% MeOH in EtOAc	30% MeOH in EtOAc	40% MeOH in EtOAc	50% MeOH in EtOAc	60% MeOH in EtOAc
	0	0.03	0.11	0.29	0.55	0.69	0.9	0.67	0.67	0.71	0.73	0.73	0.75	0.77
	0.03	0.11	0.24	0.39	0.59	0.69	0.87	0.49	0.58	0.62	0.66	0.65	0.69	0.71
	0	0.05	0.16	0.37	0.6	0.7	0.91	0.6	0.64	0.68	0.7	0.7	0.72	0.74
	0.04	0.18	0.39	0.58	0.71	0.79	0.93	0.55	0.62	0.65	0.68	0.68	0.71	0.73
	0.28	0.51	0.64	0.71	0.79	0.85	0.94	0.62	0.65	0.69	0.71	0.7	0.71	0.74
	0.27	0.52	0.67	0.74	0.82	0.87	0.95	0.59	0.62	0.65	0.67	0.67	0.69	0.71
	0.08	0.25	0.51	0.62	0.74	0.82	0.92	0.61	0.62	0.65	0.67	0.67	0.69	0.71
	0	0	0.13	0.17	0.47	0.64	0.86	0.5	0.61	0.65	0.69	0.69	0.7	0.74
	0.25	0.44	0.64	0.7	0.8	0.85	0.93	0.7	0.71	0.74	0.76	0.75	0.78	0.81
Average (R <sub>f</sub> <sub>ave</sub> )	0.11	0.23	0.39	0.51	0.67	0.77	0.91	0.59	0.64	0.67	0.70	0.69	0.72	0.74

Supporting Information  
Taygerly, Miller, Yee and Peterson  
**Table S5.** Individual R<sub>f</sub> values for neutral compounds tested in MeOH/MTBE and 3:1 EtOAc:EtOH in MTBE

Compound	MeOH in MTBE												3:1 EtOAc:EtOH in MTBE					
	100 % MTBE	1% MeOH in MTBE	2.5% MeOH in MTBE	5% MeOH in MTBE	10% MeOH in MTBE	15% MeOH in MTBE	20% MeOH in MTBE	25% MeOH in MTBE	30% MeOH in MTBE	40% MeOH in MTBE	50% MeOH in MTBE	60% MeOH in MTBE	10% (3:1 EtOAc:EtOH) in MTBE	15% (3:1 EtOAc:EtOH) in MTBE	20% (3:1 EtOAc:EtOH) in MTBE	25% (3:1 EtOAc:EtOH) in MTBE	50% (3:1 EtOAc:EtOH) in MTBE	75% (3:1 EtOAc:EtOH) in MTBE
	0.53	0.53	0.56	0.58	0.59	0.64	0.68	0.69	0.73	0.75	0.78	0.79	0.61	0.64	0.65	0.67	0.72	0.73
	0.3	0.35	0.37	0.5	0.47	0.57	0.58	0.61	0.67	0.68	0.72	0.75	0.42	0.46	0.5	0.52	0.6	0.62
	0.46	0.47	0.51	0.56	0.55	0.63	0.65	0.66	0.72	0.72	0.76	0.78	0.57	0.61	0.62	0.65	0.7	0.7
	0.46	0.48	0.51	0.59	0.55	0.62	0.63	0.64	0.7	0.7	0.73	0.76	0.55	0.57	0.59	0.61	0.66	0.66
	0.49	0.51	0.54	0.6	0.56	0.64	0.66	0.66	0.72	0.72	0.74	0.77	0.57	0.59	0.61	0.63	0.68	0.68
	0.5	0.52	0.53	0.59	0.54	0.62	0.63	0.63	0.69	0.68	0.71	0.73	0.56	0.58	0.59	0.62	0.66	0.66
	0.53	0.54	0.55	0.59	0.56	0.61	0.63	0.63	0.69	0.68	0.72	0.74	0.6	0.61	0.62	0.65	0.68	0.68
	0.42	0.42	0.47	0.55	0.52	0.62	0.63	0.65	0.71	0.72	0.75	0.78	0.51	0.54	0.55	0.59	0.67	0.67
	0.64	0.66	0.66	0.68	0.64	0.71	0.73	0.73	0.79	0.79	0.81	0.83	0.68	0.7	0.7	0.73	0.75	0.75
Average (R <sub>f</sub> <sub>ave</sub> )	0.48	0.50	0.52	0.58	0.55	0.63	0.65	0.66	0.71	0.72	0.75	0.77	0.56	0.59	0.60	0.63	0.68	0.68

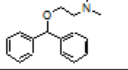
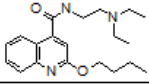

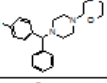

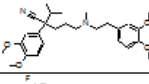
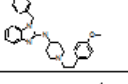
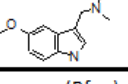
## Comparison of $R_{f,avg}$ Values for Basic Compounds in Solvent Systems Modified with $NH_4OH$



**Figure S2.**  $R_{f,avg}$  values for the basic compound set tested in solvent systems modified with  $NH_4OH$  at increasing concentrations of polar eluent. Linear regression lines can be used to compare relative solvent eluting strength at different solvent concentrations.

Supporting Information

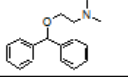
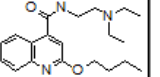

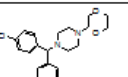

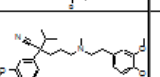

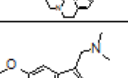
**Table S6.** Individual R<sub>f</sub> values for basic compounds tested in MeOH/DCM, 10:1 MeOH:NH<sub>4</sub>OH in DCM, and 10:1 MeOH:NH<sub>4</sub>OH in MTBE

Compound	2.5% MeOH in DCM	5% MeOH in DCM	10% MeOH in DCM	15% MeOH in DCM	20% MeOH in DCM	1% (10:1 MeOH:NH <sub>4</sub> OH) in DCM	2.5% (10:1 MeOH:NH <sub>4</sub> OH) in DCM	5% (10:1 MeOH:NH <sub>4</sub> OH) in DCM	10% (10:1 MeOH:NH <sub>4</sub> OH) in DCM	20% (10:1 MeOH:NH <sub>4</sub> OH) in DCM	2.5% (10:1 MeOH:NH <sub>4</sub> OH) in MTBE	5% (10:1 MeOH:NH <sub>4</sub> OH) in MTBE	10% (10:1 MeOH:NH <sub>4</sub> OH) in MTBE	15% (10:1 MeOH:NH <sub>4</sub> OH) in MTBE	20% (10:1 MeOH:NH <sub>4</sub> OH) in MTBE
	0.02	0.12	0.33	0.38	0.5	0.03	0.1	0.42	0.61	0.84	0.2	0.26	0.5	0.57	0.65
	0.02	0.13	0.36	0.41	0.55	0.03	0.1	0.44	0.64	0.82	0.25	0.3	0.55	0.63	0.69
	0.03	0.22	0.53	0.57	0.76	0.02	0.08	0.41	0.62	0.82	0.09	0.14	0.35	0.46	0.55
	0.03	0.21	0.55	0.58	0.76	0.03	0.1	0.42	0.59	0.79	0.1	0.15	0.36	0.49	0.57
	0.04	0.19	0.52	0.56	0.71	0.02	0.08	0.45	0.66	0.67	0.3	0.4	0.59	0.68	0.72
	0.08	0.36	0.67	0.69	0.83	0.08	0.19	0.67	0.78	0.9	0.2	0.28	0.49	0.58	0.65
	0.03	0.21	0.57	0.62	0.77	0.03	0.1	0.45	0.71	0.88	0.09	0.18	0.43	0.57	0.68
	0.02	0.05	0.07	0.13	0.1	0.02	0.04	0.09	0.18	0.42	0.04	0.05	0.18	0.23	0.34
Average (R <sub>f</sub> <sub>ave</sub> )	0.03	0.19	0.45	0.49	0.62	0.03	0.10	0.42	0.60	0.77	0.16	0.22	0.43	0.53	0.61

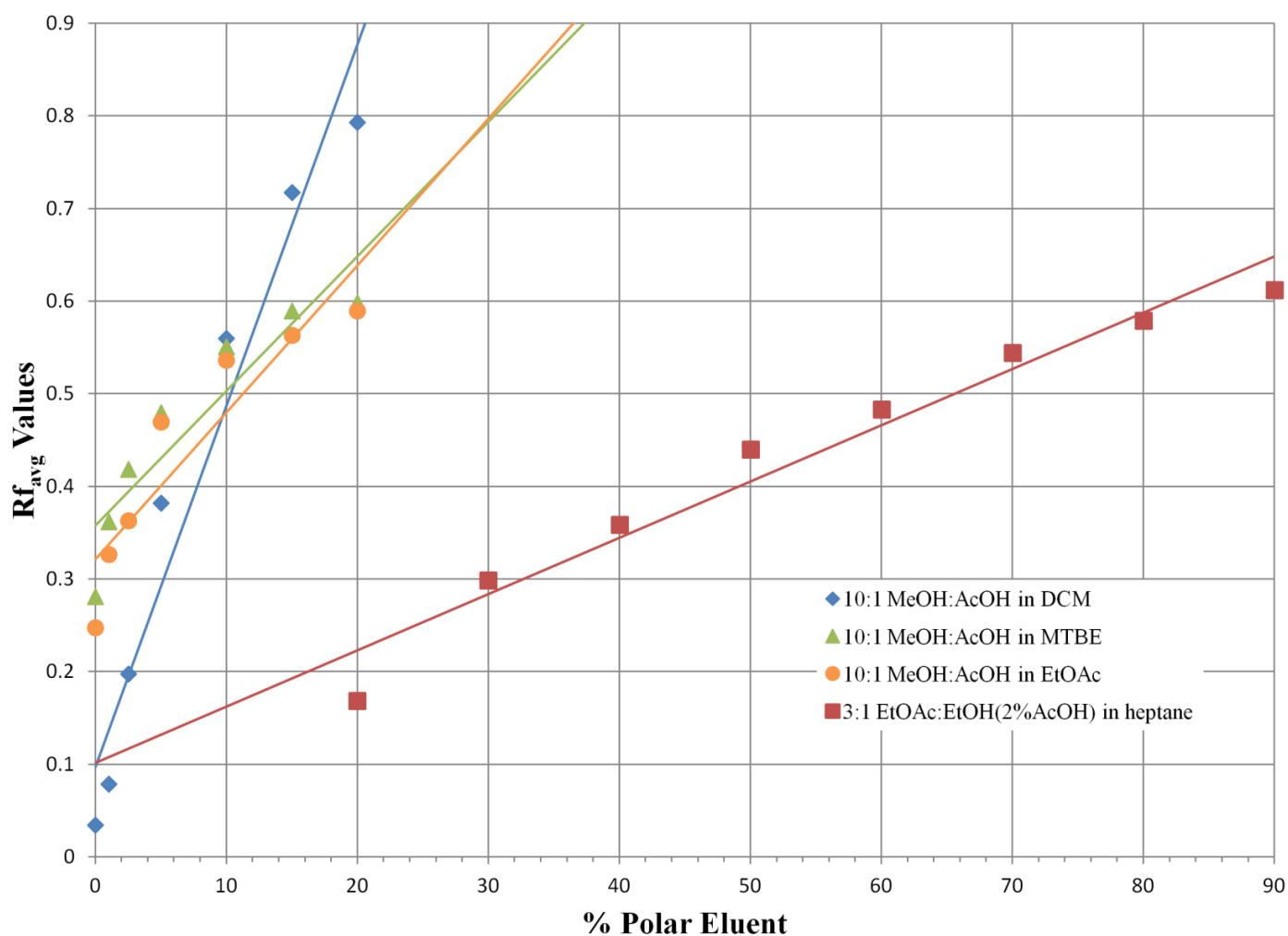
Supporting Information

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**Table S7.** Individual R<sub>f</sub> values for basic compounds tested in 3:1 EtOAc:EtOH(modified with 2% NH<sub>4</sub>OH) and 10:1 MeOH:NH<sub>4</sub>OH in EtOAc.


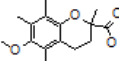
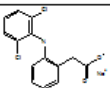
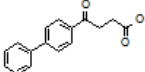
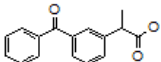
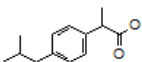
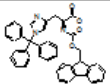

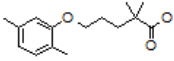
Compound	20% 3:1 EtOAc:EtOH (2%NH <sub>4</sub> OH) in he	30% 3:1 EtOAc:EtOH (2%NH <sub>4</sub> OH) in he	40% 3:1 EtOAc:EtOH (2%NH <sub>4</sub> OH) in he	50% 3:1 EtOAc:EtOH (2%NH <sub>4</sub> OH) in he	60% 3:1 EtOAc:EtOH (2%NH <sub>4</sub> OH) in he	70% 3:1 EtOAc:EtOH (2%NH <sub>4</sub> OH) in he	80% 3:1 EtOAc:EtOH (2%NH <sub>4</sub> OH) in he	90% 3:1 EtOAc:EtOH (2%NH <sub>4</sub> OH) in he	100% 3:1 EtOAc:EtOH (2%NH <sub>4</sub> OH)	100% EtOAc	1% (10:1 MeOH:NH <sub>4</sub> OH) in EtOAc	2.5% (10:1 MeOH:NH <sub>4</sub> OH) in EtOAc	5% (10:1 MeOH:NH <sub>4</sub> OH) in EtOAc	10% (10:1 MeOH:NH <sub>4</sub> OH) in EtOAc	15% (10:1 MeOH:NH <sub>4</sub> OH) in EtOAc	20% (10:1 MeOH:NH <sub>4</sub> OH) in EtOAc	25% (10:1 MeOH:NH <sub>4</sub> OH) in EtOAc
	0.15	0.27	0.35	0.42	0.46	0.52	0.51	0.51	0.53	0	0.07	0.14	0.21	0.47	0.49	0.57	0.64
	0.11	0.23	0.34	0.43	0.51	0.57	0.6	0.56	0.61	0.03	0.08	0.2	0.29	0.54	0.57	0.63	0.69
	0.06	0.12	0.2	0.29	0.38	0.44	0.5	0.45	0.54	0.03	0.05	0.12	0.21	0.45	0.5	0.57	0.64
	0.07	0.14	0.22	0.32	0.39	0.45	0.49	0.46	0.52	0.03	0.05	0.13	0.2	0.44	0.49	0.57	0.63
	0.14	0.28	0.39	0.5	0.58	0.63	0.66	0.61	0.67	0.1	0.2	0.33	0.4	0.62	0.65	0.68	0.72
	0.09	0.19	0.3	0.41	0.51	0.56	0.61	0.56	0.63	0.05	0.1	0.26	0.34	0.57	0.6	0.66	0.71
	0.08	0.16	0.27	0.38	0.48	0.53	0.59	0.53	0.62	0.04	0.09	0.17	0.24	0.54	0.59	0.65	0.7
	0.04	0.04	0.08	0.09	0.13	0.14	0.17	0.19	0.21	0.04	0.04	0.06	0.06	0.14	0.13	0.28	
Average (R <sub>f</sub> <sub>ave</sub> )	0.09	0.18	0.27	0.36	0.43	0.48	0.52	0.48	0.54	0.04	0.09	0.18	0.24	0.47	0.50	0.58	0.68

## Comparison of $R_{f,avg}$ Values in Solvent Systems Modified with AcOH



**Figure S3.**  $R_{f,avg}$  values for the acidic compound set tested in solvent systems modified with AcOH at increasing concentrations of polar eluent. Linear regression lines can be used to compare relative solvent eluting strength at different solvent concentrations.


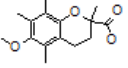
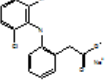
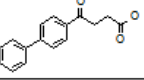
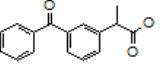
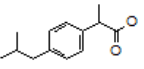
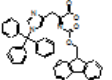

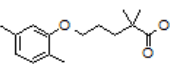
Supporting Information  
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**Table S8.** Individual R<sub>f</sub> values for acidic compounds tested in 10:1 MeOH:AcOH in DCM and 10:1 MeOH:AcOH in MTBE.

Compound	100% DCM	1% (10:1 MeOH:AcOH) in DCM	2.5% (10:1 MeOH:AcOH) in DCM	5% (10:1 MeOH:AcOH) in DCM	10% (10:1 MeOH:AcOH) in DCM	15% (10:1 MeOH:AcOH) in DCM	20% (10:1 MeOH:AcOH) in DCM	100% MTBE	1% (10:1 MeOH:AcOH) in MTBE	2.5% (10:1 MeOH:AcOH) in MTBE	5% (10:1 MeOH:AcOH) in MTBE	10% (10:1 MeOH:AcOH) in MTBE	15% (10:1 MeOH:AcOH) in MTBE	20% (10:1 MeOH:AcOH) in MTBE
	0.02	0.05	0.2	0.35	0.55	0.7	0.76	0.22	0.36	0.43	0.51	0.57	0.61	0.61
	0.02	0.07	0.21	0.38	0.57	0.72	0.8	0.27	0.39	0.47	0.53	0.6	0.63	0.64
	0.02	0.06	0.23	0.4	0.6	0.72	0.8	0.27	0.36	0.48	0.54	0.61	0.64	0.65
	0.02	0.06	0.21	0.38	0.58	0.7	0.8	0.17	0.29	0.38	0.49	0.58	0.62	0.62
	0.03	0.08	0.22	0.4	0.57	0.72	0.81	0.28	0.41	0.47	0.53	0.6	0.64	0.65
	0.07	0.13	0.26	0.46	0.62	0.76	0.83	0.57	0.6	0.61	0.62	0.67	0.69	0.69
	0.02	0.01	0.04	0.25	0.47	0.7	0.76	0.03	0.03	0.03	0.08	0.14	0.21	0.24
	0.02	0.01	0.04	0.18	0.36	0.59	0.69	0.11	0.17	0.23	0.34	0.48	0.55	0.55
	0.09	0.24	0.37	0.64	0.72	0.85	0.89	0.61	0.65	0.67	0.68	0.71	0.72	0.74
Average (R <sub>f,ave</sub> )	0.03	0.08	0.20	0.38	0.56	0.72	0.79	0.28	0.36	0.42	0.48	0.55	0.59	0.60

Supporting Information

Taygerly, Miller, Yee and Peterson

**Table S9.** Individual R<sub>f</sub> values for acidic compounds tested in 10:1 MeOH:AcOH in EtOAc and 3:1 EtOAc:EtOH (modified with 2% AcOH) in heptanes

Compound	100% EtOAc	1% (10:1 MeOH:AcOH) in EtOAc	2.5% (10:1 MeOH:AcOH) in EtOAc	5% (10:1 MeOH:AcOH) in EtOAc	10% (10:1 MeOH:AcOH) in EtOAc	15% (10:1 MeOH:AcOH) in EtOAc	20% (10:1 MeOH:AcOH) in EtOAc	20% 3:1 EtOAc:EtOH (2% AcOH) in heptanes	30% 3:1 EtOAc:EtOH (2% AcOH) in heptanes	40% 3:1 EtOAc:EtOH (2% AcOH) in heptanes	50% 3:1 EtOAc:EtOH (2% AcOH) in heptanes	60% 3:1 EtOAc:EtOH (2% AcOH) in heptanes	70% 3:1 EtOAc:EtOH (2% AcOH) in heptanes	80% 3:1 EtOAc:EtOH (2% AcOH) in heptanes	90% 3:1 EtOAc:EtOH (2% AcOH) in heptanes
	0.17	0.31	0.34	0.46	0.55	0.58	0.58	0.15	0.3	0.36	0.44	0.48	0.55	0.58	0.63
	0.2	0.33	0.37	0.49	0.56	0.59	0.6	0.2	0.34	0.4	0.49	0.52	0.58	0.6	0.63
	0.2	0.31	0.36	0.49	0.57	0.6	0.61	0.2	0.35	0.41	0.49	0.53	0.59	0.61	0.64
	0.19	0.31	0.37	0.49	0.57	0.59	0.61	0.1	0.3	0.32	0.46	0.5	0.56	0.6	0.62
	0.25	0.36	0.4	0.52	0.58	0.6	0.62	0.17	0.32	0.39	0.47	0.52	0.58	0.61	0.64
	0.47	0.46	0.51	0.61	0.64	0.66	0.66	0.26	0.42	0.49	0.55	0.59	0.64	0.66	0.68
	0.03	0.05	0.06	0.1	0.17	0.23	0.37	0.03	0.04	0.09	0.1	0.15	0.21	0.27	0.35
	0.12	0.17	0.23	0.4	0.49	0.53	0.55	0.05	0.13	0.22	0.34	0.42	0.5	0.56	0.59
	0.6	0.64	0.63	0.67	0.7	0.69	0.71	0.36	0.49	0.55	0.62	0.64	0.69	0.72	0.73
Average (R <sub>f_ave</sub> )	0.25	0.33	0.36	0.47	0.54	0.56	0.59	0.17	0.30	0.36	0.44	0.48	0.54	0.58	0.61