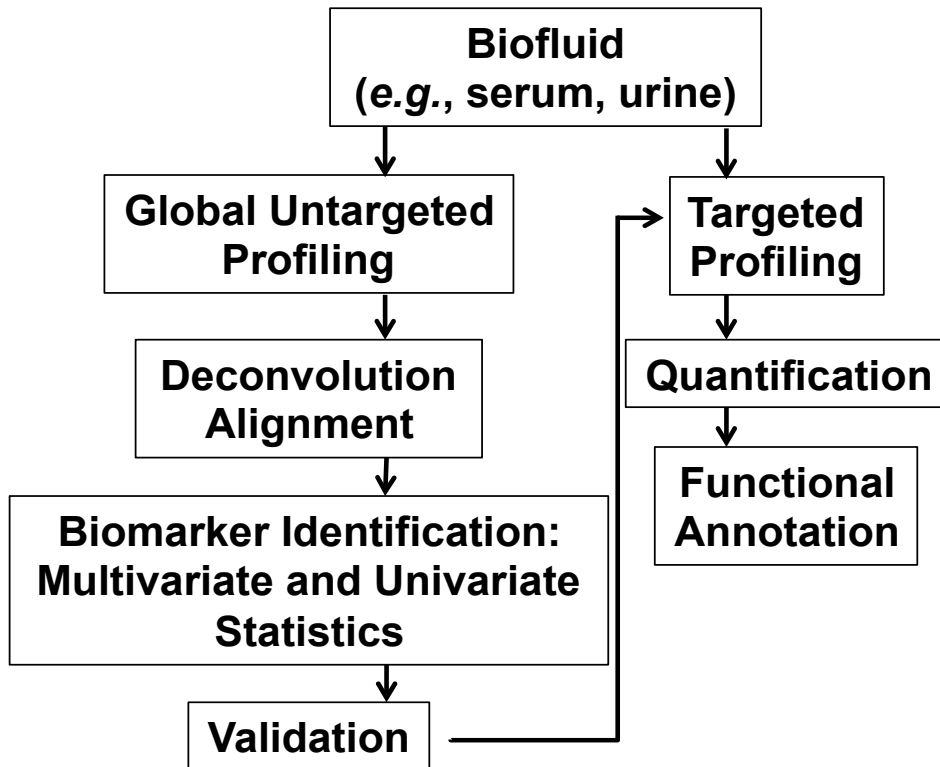


**Supplementary Table 1.** PC and ePC molecules that exhibited significantly lowered concentrations after IR exposure (Mean concentration  $\pm$  standard error of the mean; Kruskal-Wallis test,  $P < 0.05$ ; bold indicates significantly lower than the control).

Compound	0 Gy	2 Gy	4 Gy	6 Gy	8 Gy	10 Gy	<i>P</i> -value	<i>H</i> -value
PC (28:1)	0.69 $\pm$ 0.05	<b>0.50 <math>\pm</math> 0.03</b>	<b>0.50 <math>\pm</math> 0.03</b>	<b>0.47 <math>\pm</math> 0.03</b>	<b>0.49 <math>\pm</math> 0.02</b>	<b>0.47 <math>\pm</math> 0.05</b>	0.006	16.4
PC (30:0)	1.28 $\pm$ 0.10	1.10 $\pm$ 0.05	<b>1.01 <math>\pm</math> 0.07</b>	<b>0.97 <math>\pm</math> 0.06</b>	<b>0.96 <math>\pm</math> 0.05</b>	<b>0.83 <math>\pm</math> 0.05</b>	0.003	18.4
PC (32:3)	0.24 $\pm$ 0.01	0.21 $\pm$ 0.01	<b>0.20 <math>\pm</math> 0.01</b>	<b>0.20 <math>\pm</math> 0.01</b>	<b>0.21 <math>\pm</math> 0.01</b>	<b>0.17 <math>\pm</math> 0.01</b>	0.010	15.0
PC (34:3)	11.00 $\pm$ 1.19	9.38 $\pm$ 0.85	8.75 $\pm$ 0.79	9.47 $\pm$ 0.70	9.42 $\pm$ 0.94	<b>5.43 <math>\pm</math> 0.49</b>	0.002	19.2
PC (34:4)	0.92 $\pm$ 0.06	<b>0.73 <math>\pm</math> 0.05</b>	<b>0.69 <math>\pm</math> 0.05</b>	<b>0.74 <math>\pm</math> 0.03</b>	<b>0.76 <math>\pm</math> 0.06</b>	<b>0.51 <math>\pm</math> 0.04</b>	0.001	21.9
PC (36:1)	47.45 $\pm$ 2.72	<b>38.13 <math>\pm</math> 4.18</b>	<b>33.53 <math>\pm</math> 2.94</b>	<b>28.74 <math>\pm</math> 2.72</b>	<b>30.55 <math>\pm</math> 3.47</b>	<b>21.68 <math>\pm</math> 1.97</b>	<0.001	25.2
PC (36:2)	185.83 $\pm$ 7.91	<b>165.42 <math>\pm</math> 4.35</b>	169.58 $\pm$ 5.58	<b>157.25 <math>\pm</math> 3.96</b>	<b>164.83 <math>\pm</math> 7.13</b>	<b>149.55 <math>\pm</math> 8.97</b>	0.042	11.5
PC (36:3)	97.62 $\pm$ 8.58	<b>67.66 <math>\pm</math> 4.42</b>	<b>65.40 <math>\pm</math> 4.56</b>	<b>61.70 <math>\pm</math> 3.74</b>	<b>61.14 <math>\pm</math> 4.08</b>	<b>49.36 <math>\pm</math> 3.98</b>	<0.001	25.7
PC (36:5)	14.73 $\pm$ 0.93	<b>10.78 <math>\pm</math> 0.84</b>	<b>9.94 <math>\pm</math> 0.67</b>	<b>9.73 <math>\pm</math> 0.43</b>	<b>10.16 <math>\pm</math> 0.62</b>	<b>11.72 <math>\pm</math> 1.76</b>	0.005	16.7
PC (36:6)	0.67 $\pm$ 0.05	<b>0.50 <math>\pm</math> 0.03</b>	<b>0.48 <math>\pm</math> 0.03</b>	<b>0.51 <math>\pm</math> 0.02</b>	<b>0.53 <math>\pm</math> 0.04</b>	<b>0.45 <math>\pm</math> 0.03</b>	0.019	13.5
PC (38:3)	47.47 $\pm$ 3.56	<b>30.98 <math>\pm</math> 2.32</b>	<b>26.43 <math>\pm</math> 2.17</b>	<b>24.01 <math>\pm</math> 1.91</b>	<b>24.54 <math>\pm</math> 1.45</b>	<b>25.96 <math>\pm</math> 2.04</b>	<0.001	28.0
PC (40:3)	0.83 $\pm$ 0.05	<b>0.63 <math>\pm</math> 0.03</b>	<b>0.58 <math>\pm</math> 0.02</b>	<b>0.57 <math>\pm</math> 0.03</b>	<b>0.59 <math>\pm</math> 0.02</b>	<b>0.65 <math>\pm</math> 0.06</b>	0.003	17.7
PC (40:4)	4.58 $\pm$ 0.31	<b>3.12 <math>\pm</math> 0.18</b>	<b>2.64 <math>\pm</math> 0.13</b>	<b>2.54 <math>\pm</math> 0.16</b>	<b>2.61 <math>\pm</math> 0.13</b>	<b>2.85 <math>\pm</math> 0.18</b>	<0.001	30.3
PC (40:5)	18.18 $\pm$ 1.18	<b>12.02 <math>\pm</math> 0.55</b>	<b>11.93 <math>\pm</math> 0.52</b>	<b>11.00 <math>\pm</math> 0.85</b>	<b>11.81 <math>\pm</math> 0.66</b>	<b>13.93 <math>\pm</math> 1.19</b>	0.001	21.9
PC (42:5)	1.46 $\pm$ 0.14	<b>0.88 <math>\pm</math> 0.03</b>	<b>0.84 <math>\pm</math> 0.06</b>	<b>0.80 <math>\pm</math> 0.05</b>	<b>0.77 <math>\pm</math> 0.04</b>	<b>0.68 <math>\pm</math> 0.04</b>	<0.001	27.0
PC (42:6)	1.00 $\pm$ 0.10	<b>0.69 <math>\pm</math> 0.03</b>	<b>0.60 <math>\pm</math> 0.04</b>	<b>0.57 <math>\pm</math> 0.03</b>	<b>0.54 <math>\pm</math> 0.02</b>	<b>0.48 <math>\pm</math> 0.03</b>	<0.001	30.8
ePC (30:0)	0.26 $\pm$ 0.01	<b>0.20 <math>\pm</math> 0.01</b>	<b>0.19 <math>\pm</math> 0.01</b>	<b>0.18 <math>\pm</math> 0.01</b>	<b>0.19 <math>\pm</math> 0.01</b>	<b>0.18 <math>\pm</math> 0.01</b>	0.001	21.5
ePC (32:1)	1.86 $\pm$ 0.13	<b>1.60 <math>\pm</math> 0.08</b>	<b>1.37 <math>\pm</math> 0.07</b>	<b>1.51 <math>\pm</math> 0.10</b>	<b>1.55 <math>\pm</math> 0.08</b>	<b>1.52 <math>\pm</math> 0.06</b>	0.040	11.6
ePC (32:2)	0.65 $\pm$ 0.05	0.62 $\pm$ 0.03	0.56 $\pm$ 0.03	0.57 $\pm$ 0.04	0.57 $\pm$ 0.02	<b>0.42 <math>\pm</math> 0.02</b>	<0.001	23.5
ePC (34:2)	9.39 $\pm$ 0.68	9.25 $\pm$ 0.60	8.32 $\pm$ 0.53	8.16 $\pm$ 0.52	8.04 $\pm$ 0.49	<b>5.26 <math>\pm</math> 0.28</b>	<0.001	25.9
ePC (36:2)	19.94 $\pm$ 1.31	17.38 $\pm$ 1.02	<b>15.86 <math>\pm</math> 0.98</b>	<b>13.91 <math>\pm</math> 0.88</b>	<b>13.85 <math>\pm</math> 0.99</b>	<b>10.73 <math>\pm</math> 0.68</b>	<0.001	30.7
ePC (36:3)	6.23 $\pm$ 0.49	5.64 $\pm$ 0.33	<b>5.00 <math>\pm</math> 0.29</b>	<b>5.02 <math>\pm</math> 0.31</b>	<b>4.93 <math>\pm</math> 0.27</b>	<b>3.38 <math>\pm</math> 0.18</b>	<0.001	28.2
ePC (38:2)	3.95 $\pm$ 0.29	3.58 $\pm$ 0.23	3.32 $\pm$ 0.19	<b>2.87 <math>\pm</math> 0.23</b>	<b>2.69 <math>\pm</math> 0.19</b>	<b>1.95 <math>\pm</math> 0.15</b>	<0.001	29.8
ePC (38:3)	6.48 $\pm$ 0.39	<b>4.68 <math>\pm</math> 0.27</b>	<b>4.17 <math>\pm</math> 0.28</b>	<b>4.05 <math>\pm</math> 0.23</b>	<b>4.15 <math>\pm</math> 0.22</b>	<b>4.42 <math>\pm</math> 0.38</b>	0.001	21.0

**Supplementary Table 2.** PC and ePC molecules that significantly changed in concentration after IR exposure, but increased at 10 Gy dose (Mean concentration  $\pm$  standard error of the mean; Kruskal-Wallis test,  $P < 0.05$ ; bold indicates significantly different than control; \* indicates higher than control).

Compound	0 Gy	2 Gy	4 Gy	6 Gy	8 Gy	10 Gy	<i>P</i> -value	<i>H</i> -value
PC (36:4)	129.88 $\pm$ 8.11	<b>94.18 <math>\pm</math> 5.54</b>	<b>85.93 <math>\pm</math> 4.54</b>	<b>90.82 <math>\pm</math> 4.47</b>	<b>96.04 <math>\pm</math> 4.64</b>	128.30 $\pm$ 9.25	<0.001	27.0
PC (38:4)	114.16 $\pm$ 8.82	<b>73.84 <math>\pm</math> 3.66</b>	<b>70.41 <math>\pm</math> 4.10</b>	<b>72.38 <math>\pm</math> 5.32</b>	<b>78.51 <math>\pm</math> 4.76</b>	106.26 $\pm$ 7.39	<0.001	28.9
PC (38:5)	48.11 $\pm$ 3.78	<b>33.02 <math>\pm</math> 1.83</b>	<b>31.58 <math>\pm</math> 1.61</b>	<b>31.03 <math>\pm</math> 1.59</b>	<b>32.64 <math>\pm</math> 1.52</b>	44.54 $\pm$ 4.20	<0.001	21.2
PC (38:6)	92.12 $\pm$ 7.57	<b>65.81 <math>\pm</math> 3.80</b>	<b>63.05 <math>\pm</math> 2.38</b>	<b>67.23 <math>\pm</math> 4.25</b>	<b>72.52 <math>\pm</math> 5.09</b>	<b>118.06 <math>\pm</math> 8.12*</b>	<0.001	29.4
PC (40:6)	55.77 $\pm$ 4.66	<b>40.33 <math>\pm</math> 1.89</b>	<b>39.88 <math>\pm</math> 1.58</b>	<b>38.15 <math>\pm</math> 3.41</b>	<b>41.00 <math>\pm</math> 2.45</b>	51.77 $\pm$ 3.56	0.007	16.0
PC (42:4)	0.32 $\pm$ 0.02	<b>0.25 <math>\pm</math> 0.01</b>	<b>0.22 <math>\pm</math> 0.01</b>	<b>0.23 <math>\pm</math> 0.01</b>	<b>0.24 <math>\pm</math> 0.01</b>	0.30 $\pm$ 0.03	0.016	14.0
ePC (38:4)	14.35 $\pm$ 1.14	<b>11.43 <math>\pm</math> 0.50</b>	<b>9.69 <math>\pm</math> 0.43</b>	<b>10.31 <math>\pm</math> 0.74</b>	<b>11.36 <math>\pm</math> 0.55</b>	12.69 $\pm$ 0.79	0.003	18.4
ePC (38:5)	14.83 $\pm$ 1.26	<b>11.94 <math>\pm</math> 0.51</b>	<b>10.12 <math>\pm</math> 0.39</b>	<b>11.13 <math>\pm</math> 0.71</b>	<b>11.87 <math>\pm</math> 0.63</b>	13.06 $\pm$ 0.97	0.009	15.3
ePC (40:3)	1.27 $\pm$ 0.08	1.07 $\pm$ 0.05	0.98 $\pm$ 0.05	1.04 $\pm$ 0.08	1.16 $\pm$ 0.09	<b>1.70 <math>\pm</math> 0.25*</b>	0.006	16.3
ePC (40:4)	3.33 $\pm$ 0.27	<b>2.84 <math>\pm</math> 0.12</b>	<b>2.56 <math>\pm</math> 0.10</b>	<b>2.81 <math>\pm</math> 0.15</b>	<b>3.04 <math>\pm</math> 0.15</b>	3.66 $\pm$ 0.26	0.003	18.3
ePC (40:5)	6.60 $\pm$ 0.53	5.67 $\pm$ 0.24	<b>5.18 <math>\pm</math> 0.14</b>	5.81 $\pm$ 0.30	6.39 $\pm$ 0.34	<b>8.55 <math>\pm</math> 0.72*</b>	<0.001	24.6
ePC (40:6)	9.61 $\pm$ 0.88	<b>7.82 <math>\pm</math> 0.37</b>	<b>7.13 <math>\pm</math> 0.27</b>	<b>7.57 <math>\pm</math> 0.57</b>	<b>8.18 <math>\pm</math> 0.45</b>	10.19 $\pm$ 0.73	0.008	15.6



Supplementary Fig. 1 Untargeted and targeted workflows for metabolomics. (adapted from <sup>29</sup>)