SUPPLEMENTARY INFORMATION

for

Methoxy-substituted 9-Aminomethyl-9,10-dihydroanthracene (AMDA) Derivatives Exhibit Differential Binding Affinities at the h5-HT_{2A} Receptor

*Gajanan K. Dewkar[a], Srinivas Peddi[a], Philip D. Mosier[a], Bryan L. Roth[b] and Richard B. Westkaemper[a]**

[a]Department of Medicinal Chemistry, School of Pharmacy, Virginia Commonwealth University, Richmond, VA 23298 USA

[b]Departments of Pharmacology and Medicinal Chemistry, Lineberger Cancer Center, Neurosciences Program and NIMH Psychoactive Drug Screening Program, University of North Carolina School of Medicine, Chapel Hill, NC 27599 USA

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Table S1. GOLD 3.0 Docking results (ChemScore) for the methoxy-AMDA series. For each isomer, the highest-ranking pose from each docking run is considered. For docked solutions in which a hydrogen bond between the receptor and the methoxy oxygen atom was plausible, a short molecular dynamics (MD) simulation was performed to assess the stability of the hydrogen bond(s). [MD+] indicates that the hydrogen bonds involving the specified residues remained intact during the MD simulation. [MD-] indicates that the hydrogen bonds involving the specified residues did not remain intact during the MD simulation.

isomer		K_i (nM)	ChemScore Site 1	ChemScore Site 2	Predicted Binding Site
1-MeO	R	1158	Score: 35.48 Oxygen atom H-bonds with: S159 [MD-]: S159	Score: 32.81 Oxygen atom H-bonds with: NONE	Probably Site 1
	S		Score: 33.69 Oxygen atom H-bonds with: NONE	Score: 35.01 Oxygen atom H-bonds with: S226 [MD-] S226	Probably Site 2
2-MeO	R	1367	Score: 33.89 Oxygen atom H-bonds with: NONE	Score: 35.88 Oxygen atom H-bonds with: NONE	—
	S		Score: 35.47 Oxygen atom H-bonds with: NONE	Score: 38.71 Oxygen atom H-bonds with: S77 [MD-]: S77, T81, S131	Probably Site 2
3-MeO	R	7.5	Score: 33.36 Oxygen atom H-bonds with: NONE	Score: 35.90 Oxygen atom H-bonds with: S159 [MD+]: S159	Site 2
	S		Score: 35.36 Oxygen atom H-bonds with: NONE	Score: 38.39 Oxygen atom H-bonds with: T81, S131 [MD+]: S131	Site 2
4-MeO	R	124	Score: 34.72 Oxygen atom H-bonds with: NONE	Score: 35.50 Oxygen atom H-bonds with: NONE	—
	S		Score: 35.61 Oxygen atom H-bonds with: S239 [MD+]: S239	Score: 35.47 Oxygen atom H-bonds with: NONE	Site 1

Table S2. Interatomic distances between heavy atoms of the docked ligand and heavy atoms in the receptor binding site. The Ballesteros-Weinstein index for each residue is shown as a superscript. Residues in the EL2 loop are specified relative to the disulfide bond-forming C227 (EL2.50).

	Interatomic Distance (Å)				
Ligand	**< 3.0**	**< 3.5**	**< 4.0**	**< 4.5**	**< 5.0**
((*R*)-3-methoxy-AMDA)	D155$^{3.32}$	S159$^{3.36}$ V366$^{7.39}$ G369$^{7.42}$ Y370$^{7.43}$	S131$^{2.61}$ W151$^{3.28}$ I152$^{3.29}$ S226$^{EL2.49}$ C227$^{EL2.50}$ M335$^{6.47}$ W336$^{6.48}$	S77$^{1.35}$ T81$^{1.39}$ V127$^{2.57}$ M128$^{2.58}$ F158$^{3.35}$ F339$^{6.51}$ W367$^{7.40}$ S373$^{7.46}$	L123$^{2.53}$
((*S*)-3-methoxy-AMDA)	D155$^{3.32}$	T81$^{1.39}$ S131$^{2.61}$ Y370$^{7.43}$	M128$^{2.58}$ W151$^{3.28}$ S159$^{3.36}$ V366$^{7.39}$ G369$^{7.42}$ S373$^{7.46}$	L123$^{2.53}$ V127$^{2.57}$ C227$^{EL2.50}$ I152$^{3.29}$ M335$^{6.47}$ F339$^{6.51}$ W367$^{7.40}$	S77$^{1.35}$ L80$^{1.38}$ S226$^{EL2.49}$ W336$^{6.48}$
((*S*)-4-methoxy-AMDA)	D155$^{3.32}$ S159$^{3.36}$ S239$^{5.43}$	I163$^{3.40}$ L229$^{EL2.52}$ G238$^{5.42}$ S242$^{5.46}$ W336$^{6.48}$ N343$^{6.55}$	T160$^{3.37}$ V235$^{5.39}$ F340$^{6.52}$	V156$^{3.33}$ I206$^{4.56}$ F243$^{5.47}$ F332$^{6.44}$ F339$^{6.51}$ I344$^{6.56}$	F234$^{5.38}$

Figure S1. Alignment of the bovine rhodopsin and h5-HT_{2A} and sequences as submitted to MODELLER. The residues within 12 Å of the bound retinal chromophore in rhodopsin have been mutated to alanine to increase the diversity of sidechain conformations in the resulting 5-HT_{2A} receptor population. The N- and C-terminal regions were not included in the model.

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>P1;1u19A
structureX:1U19_noNCt_rbs.pdb:34     : :321   : :rhodopsin:Bos taurus:
2.20: 0.20
PWQASMAAAAAFLAAMLGFPINFLTLYVTVQHKKLRTPLNYILLNAAVAD
LAAAFAAAAAAAYAALHG-YAVFGPTACAAAAAAAAAAAAAAAAAAAVLAIERYVVVCKP
MSNF-RFG-ENHAIMGVAFAWVAAAAAAAAAAVGAAAAAAAA--AAAACAAAAATP
HEETNAEAAAAAAAAAAAAAPAAVAAFCYGQLVFTVKEAAAQQQESA
TTQKAEKEVTRMVIIAAAAAAAAAAPAAAAAAAAATHQGSD---FGAA
AAAAAAAAAAAAAVAAPVIYIMMNKQFRNCMVTTL*

>P1;h5ht2a
sequence:h5ht2a:71     : :395   : :5-HT2A receptor:Homo sapiens: 2.00:-
1.00
LQEKNWSALLTAVVIILTIAGNILVIMAVSLEKKLQNATNYFLMSLAIAD
MLLGFLVMPVSMLTILYGYRWPLPSKLCAVWIYLDVLFSTASIMHLCAISLDRYVAIQNP
IHHSR-FNSRTKAFLKIIAVWTISVGISMPIPVFGLQDDSKVFKEG-SC-------
--LLADDNFVLIGSFVSFFIPLTIMVITYFLTIKSLGGGGGGGGGG
QSISNEQKACKVLGIVFFLFVVMWCPFFITNIMAVICKESCNEDVIGA
LLNVFVWIGYLSSAVNPLVYTLFNKTYRSAFSRYI*
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EXPERIMENTAL METHODS

General Synthetic Procedures. Magnetic resonance (^{1}H NMR and ^{13}C NMR) spectra were recorded using a Varian Gemini 300 spectrometer in $CDCl_3$ using TMS as an internal standard. Melting points were determined using an SRS OptiMelt melting point apparatus and are uncorrected. Elemental analyses were performed by Atlantic Microlabs, Inc., and determined values are within (±) 0.4% of theory. All reactions were maintained under a nitrogen atmosphere. Thin-layer chromatography (TLC) was performed using silica gel coated GHLF plates (250 μm, 2.5 × 10 cm, Analtech, Inc., Newark, DE). Anhydrous solvents were purchased and stored under nitrogen over molecular sieves. Medium-pressure column chromatography (MPLC) was carried out using Silica gel 60 Å, 0.040-0.063 mm, (200-400 mesh).

1-methoxy-2-[1-{2-(methoxymethoxy)phenyl}-2-nitroethyl]benzene (7a) and **1-[(methoxymethoxy)methyl]-2-[1-(3-methoxyphenyl)-2-nitroethyl]benzene (7b).** Grignard reagent prepared from dry magnesium turnings (0.294 mg, 12.29 mmol) and 1-bromo-2-[(methoxymethoxy)methyl]benzene (2.83 g, 12.29 mmol) was slowly added drop-wise to an ice-cold stirred solution of either nitrostyrene **6a** or **6b** (2.2 g, 12.29 mmol) in anhydrous THF (20 mL) *via cannula.* After complete addition, the reaction mixture was stirred at rt (12 h), HCl (10 mL) was added and the suspension was concentrated under reduced pressure. Water was added and the yellow suspension extracted with EtOAc (3 × 25 mL). The combined EtOAc extracts were washed with satd. $NaHCO_3$, brine, dried (Na_2SO_4) and evaporated under reduced pressure to give a

yellow oil which was purified by MPLC using petroleum ether:ethyl acetate (9:1) as eluent to give **7b** (1.95 g, 62%). **7a** was obtained in sufficient purity to proceed with deprotection of the alcohol.

1-methoxy-2-(1-(2-((methoxymethoxy)methyl)phenyl)-2-nitroethyl)benzene (7a). MOM protected benzyl alcohol **7a** was deprotected to alcohol **8a** without purification.

1-((methoxymethoxy)methyl)-2-(1-(3-methoxyphenyl)-2-nitroethyl)benzene (7b). Yield (62%). ^{1}H NMR (300 MHz, $CDCl_3$): δ 3.43 (s, 3H, OCH_3), 3.76 (s, 3H, Ar-OCH_3), 4.56-4.76 (m, 4H, CH_2), 4.99-4.96 (m, 2H, O-CH_2-O), 5.34-5.29 (m, 1H, Ar-CH-Ar), 6.77-6.86 (m, 2H, Ar-H), 7.21-7.40 (m, 6H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 43.96, 55.16, 55.64, 67.47, 78.98, 95.77, 112.43, 114.15, 120.00, 127.16, 127.59, 128.78, 129.99, 130.78, 135.66, 138.17, 140.58, 159.96.

[2-{1-(2-methoxyphenyl)-2-nitroethyl}phenyl]methanol (8a) and [**2-{1-(3-methoxyphenyl)-2-nitroethyl}phenyl]methanol (8b).** A solution of MOM-protected alcohol **7a** or **7b** (2.5 g, 7.55 mmol) in CH_3OH (50 mL) was added to HCl (0.5 mL) and heated at reflux (5 h) with stirring. The solvent was removed under reduced pressure to give a viscous yellow oil which was redissolved in EtOAc, basified with satd. $NaHCO_3$ and the extracted using EtOAc (3 × 25 mL). The combined EtOAc extracts were washed with water, brine, dried (Na_2SO_4) and concentrated under reduced pressure to give a yellow oil which was purified by MPLC using petroleum ether:ethyl acetate (8:2) as eluent to give **8a** (1.86 g, 86%) or **8b** (1.98 g, 92%) as colorless oils.

(2-(1-(2-methoxyphenyl)-2-nitroethyl)phenyl)methanol (8a). Yield (86%). ^{1}H NMR (300 MHz, $CDCl_3$): δ 3.84 (s, 3H, OCH_3), 4.64-4.84 (m, 2H, CH_2NO_2), 4.93-4.98 (m, 2H, CH_2OH), 5.60-5.64 (m, 1H, Ar-CH-Ar), 6.87-6.92 (m, 2H, Ar-H), 7.03-7.06 (m, 1H, Ar-H), 7.22-7.31 (m, 4H, Ar-H), 7.40-7.42 (m, 1H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 37.50, 55.29, 62.56, 77.16, 110.74, 120.61, 126.61, 127.30, 127.56, 127.59, 128.54, 128.86, 136.42, 138.77, 156.34.

(2-(1-(3-methoxyphenyl)-2-nitroethyl)phenyl)methanol (8b). Yield (92%). ^{1}H NMR (300 MHz, $CDCl_3$): δ 3.78 (s, 3H, OCH_3), 4.65-4.83 (m, 2H, CH_2NO_2), 4.89-5.07 (m, 2H, CH_2HO), 5.29-5.34 (m, 1H, Ar-CH-Ar), 6.76-6.84 (m, 3H, Ar-H), 7.20-7.39 (m, 5H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 43.91, 55.23, 63.25, 79.06, 112.51, 114.25, 120.09, 126.81, 127.80, 128.45, 129.62, 130.09, 137.34, 138.65, 140.53, 159.98.

2-(2-amino-1-(2-methoxyphenyl)ethyl)phenyl)methanol (9a) and **(2-(2-amino-1-(3-methoxyphenyl)ethyl)phenyl)methanol (9b).** Compound **8a** or **8b** (1.5 mg, 5.22 mmol) was dissolved in anhyd. CH_3OH (50 mL) and 10%Pd/C (150 mg) was added. The reaction mixture was reduced in a Parr hydrogenator at 60 psi (36 h) and filtered over Celite. The solvent was removed under reduced pressure to give a yellow gum which was purified by MPLC using CH_2Cl_2:CH_3OH (9:1) as eluent to give **9a** (1.00 g, 75%) or **9b** (1.07 g, 80%) as a yellow oil.

2-(2-amino-1-(2-methoxyphenyl)ethyl)phenyl)methanol (9a). Yield (75%). ^{1}H-NMR (300 MHz, $CDCl_3$): δ 3.19 (s, 2H, NH_2), 3.29-3.32 (m, 2H, CH_2-NH_2), 3.67 (s, 3H, OCH_3), 4.79 (d, *J* = 11.53Hz, 1H, CH_2OH), 4.72-4.76 (m, 1H, Ar-CH-Ar), 5.15 (d, *J* = 11.53Hz, 1H, CH_2-OH), 6.79 (d, *J* = 8.24Hz, 1H, Ar-H), 6.96-7.00 (m, 1H, Ar-H), 7.11-7.32 (m, 6H, Ar-H). ^{13}C-NMR (75 MHz, $CDCl_3$): δ 40.54, 44.80, 55.22, 62.56, 110.66, 120.48, 126.47, 126.83, 127.22, 127.73, 128.11, 129.46, 130.56, 139.74, 140.63, 156.83.

(2-(2-amino-1-(3-methoxyphenyl)ethyl)phenyl)methanol (9b). Yield (80%). ^{1}H-NMR (300 MHz, $CDCl_3$): δ 2.90 (s, 2H, NH_2), 3.20-3.38 (m, 2H, CH_2-NH_2), 3.75 (s, 3H, OMe), 4.41-4.47 (m, 1H, Ar-CH-Ar), 4.47 (d, *J* = 11.63Hz, 1H, CH_2-OH), 4.96 (d, *J* = 11.81Hz, 1H, CH_2-OH) 6.72-6.80 (m, 3H, Ar-H), 7.15-7.29 (m, 4H, Ar-H), 7.34 (d, *J* = 7.41Hz, 1H, Ar-H). ^{13}C-NMR (75 MHz, $CDCl_3$): δ 45.68, 47.87, 54.66, 62.01, 110.93, 114.07, 120.10, 126.30, 126.74, 127.60, 129.09, 139.69, 140.41, 143.91, 159.35.

1-methoxy-9-aminomethyl-9,10-dihydroanthracene (2) and **2-methoxy-9-aminomethyl-9,10-dihydroanthracene (3).** To a solution of **9a** or **9b** (1 g, 3.89 mmol) in anhyd. $CHCl_3$ (10 mL) was added PPE (1 g in 2 mL anhyd. $CHCl_3$) and heated at reflux (3 h). The reaction mixture was quenched with an ice-cold solution of 10 % NaOH to basic pH and extracted with CH_2Cl_2 (3 × 25 mL). The combined CH_2Cl_2 extracts were washed with water, brine, dried (Na_2SO_4) and evaporated under reduced pressure to give an yellow viscous oil, which was purified by MPLC using CH_2Cl_2:CH_3OH (9:1) as eluent to give **2** (0.23 g, 25%) or **3** (0.28 g, 30%) as pale brown oils. The free bases were converted into their respective oxalate salts.

1-methoxy-9-aminomethyl-9,10-dihydroanthracene (2). Yield (25%). mp 173-175 ºC (oxalate). ^{1}H-NMR (300 MHz, $CDCl_3$): δ 2.21 (s, 2H, NH_2), 3.12 (dd, *J* = 4.94, 12.91Hz, 1H, CH_2-NH_2), 3.31 (dd, *J* = 4.94, 12.95Hz, 1H, CH_2-NH_2), 3.86 (s, 3H, OCH_3), 4.09 (d, *J* = 2.47Hz, 2H, Ar-CH_2-Ar), 4.50-4.54 (m, 1H, Ar-CH-Ar), 6.66 (d, *J* = 7.41Hz, 1H, Ar-H), 6.78-6.83 (m, 1H, Ar-H), 6.89 (d, *J* = 8.24Hz, 1H, Ar-H), 7.06-7.24 (m, 4H, Ar-H). ^{13}C-NMR (75 MHz, $CDCl_3$): δ 37.51, 48.38, 49.63, 55.43, 110.35, 120.36, 125.77, 126.25, 126.34, 127.47, 130.21, 133.26, 136.76, 137.52, 156.99. Anal. ($C_{16}H_{17}N_1O_1 \cdot C_2H_2O_4 \cdot 0.25\ H_2O$): C, H, N.

2-methoxy-9-aminomethyl-9,10-dihydroanthracene (3). Yield (30%). mp 189-190 ºC (oxalate). ^{1}H-NMR (300 MHz, $CDCl_3$): δ 2.23 (s, 2H, NH_2), 3.15 (dd, *J* = 6.73, 12.88Hz, 1H, CH_2-NH_2), 3.42 (dd, *J* = 6.73, 13.17Hz, 1H, CH_2-NH_2), 3.75 (s, 3H, OCH_3), 4.06-4.20 (m, 1H, Ar-CH-Ar) 4.13 (d, *J* = 6.15Hz, 2H, Ar-CH_2-Ar), 6.64-6.69 (m, 2H, Ar-H), 6.75-6.78 (m, 1H, Ar-H), 6.91 (d, *J* = 7.32Hz, 1H, Ar-H), 7.05-7.25 (m, 3H, Ar-H). ^{13}C-NMR (75 MHz, $CDCl_3$): δ 44.12, 47.42, 50.98, 55.34, 111.98, 115.11, 121.43, 126.15, 126.89, 129.74, 130.13, 133.88, 136.74, 145.28, 159.90. Anal. ($C_{16}H_{17}N_1O_1 \cdot C_2H_2O_4$): C, H, N.

2-(3-Methoxybenzyl)benzaldehyde (11a) and **2-(2-Methoxybenzyl)benzaldehyde (11b).** A mixture of 1-(bromomethyl)-3-methoxybenzene (**10a**) or 1-(bromomethyl)-2-methoxybenzene (**10b**) (2 g, 9.9 mmol), 2-formylbenzene boronic acid (1.78 g, 11.9 mmol), tetrakis(triphenylphosphine)-palladium(0) (0.35 g, 0.3 mmol) and 2N aq. Na_2CO_3

(11.6 mL) in toluene-ethanol mixture (9:1) (50 mL) was heated at 100°C (3 h). The mixture was cooled to room temperature, diluted with CH_2Cl_2 (100 mL) and washed with 5% Na_2CO_3 (50 mL) containing NH_4OH (5 mL). The organic layer was washed with water, brine, dried (Na_2SO_4) and evaporated under reduced pressure to give a brown oil which was purified by MPLC using EtOAc:petroleum ether (2:8) to give 1.76 g of **11a** (82%) or 1.62 g of **11b** (75%).

2-(3-Methoxybenzyl)benzaldehyde (11a). Yield (75%). ^{1}H NMR (300 MHz, $CDCl_3$): δ 3.75 (s, 3H, OMe), 4.42 (s, 2H, Ar-CH_2-Ar), 6.68-6.76 (m, 2H, Ar-H), 7.17-7.28 (m, 3H, Ar-H), 7.39-7.44 (m, 1H, Ar-H), 7.50-7.55 (m, 1H, Ar-H), 11.79 (d, *J* = 7.41Hz, 1H, Ar-H), 10.25 (s, 1H, CHO). ^{13}C NMR (75 MHz, $CDCl_3$): δ 37.93, 55.01, 111.35, 114.75, 121.15, 126.97, 129.49, 131.59, 131.95, 133.86, 133.88, 141.88, 142.73, 159.75, 192.27.

2-(2-Methoxybenzyl)benzaldehyde (11b). Yield (75%). ^{1}H NMR (300 MHz, $CDCl_3$): δ 3.81 (s, 3H, OCH_3), 4.39 (s, 2H, Ar-CH_2-Ar), 6.83-6.94 (m, 3H, Ar-H), 7.19-7.25 (m, 2H, Ar-H), 7.33-7.39 (m, 1H, Ar-H), 7.46-7.51 (m, 1H, Ar-H), 7.88 (d, *J* = 7.69Hz, 1H, Ar-H), 10.35 (s, 1H, CHO). ^{13}C NMR (75 MHz, $CDCl_3$): δ 31.47, 54.65, 109.94, 120.24, 126.25, 127.43, 128.32, 129.67, 129.86, 130.87, 133.38, 133.59, 142.87, 156.60, 191.50.

2-(2-(3-methoxybenzyl)phenyl)-2-(trimethylsilyloxy)acetonitrile (12a) and **2-(2-(2-methoxybenzyl)phenyl)-2-(trimethylsilyloxy)acetonitrile (12b).** A solution of TMSCN (1.05 g, 10.61 mmol) in anhyd. CH_2Cl_2 (5 mL) was added to a stirred suspension of 2-(3-methoxybenzyl)benzaldehyde **11a** or 2-(2-

methoxybenzyl)benzaldehyde **11b** (2 g, 8.84 mmol) and ZnI_2 (84 mg, 0.26 mmol) in anhyd. CH_2Cl_2 (20 mL). The reaction mixture was heated at 65 °C with continuous stirring (4 h), allowed to cool to room temperature and concentrated under reduced pressure to provide the cyano trimethylsilyl ether **12a** or **12b** as a pale yellow oil, which was subsequently used in the next step without further purification.

Cyano trimethylsilyl ethers **12a** and **12b** were reduced without purification to amino alcohols **13a** and **13b**.

2-Amino-1-[2-(3-methoxybenzyl)phenyl]ethanol (13a) and **2-Amino-1-[2-(2-methoxybenzyl)phenyl]ethanol (13b).** To a suspension of LAH (1.16 g, 30.7 mmol) in anhyd. THF (40 mL), a solution of **12a** or **12b** (2.5 g) in anhyd. THF (10 mL) was added drop-wise (30 min) and heated at reflux (14 h). The reaction mixture was cooled to rt and quenched using 10%NaOH (3 mL) and filtered using Celite. The solvent was removed under reduced pressure, water (50 mL) added and extracted with CH_2Cl_2 (3 × 25 mL). The combined CH_2Cl_2 extracts were washed with water, brine, dried (Na_2SO_4) and evaporated under reduced pressure to provide a yellow viscous liquid which was purified using MPLC using CH_2Cl_2:CH_3OH (9:1) as eluent to give 1.37 g of **13a**, (70%) or 1.34 g of **13b** (68%).

2-Amino-1-(2-(3-methoxybenzyl)phenyl)ethanol (13a). Yield (68%). ^{1}H NMR (300 MHz, $CDCl_3$): δ 2.30 (s, 2H, NH_2), 2.62 (dd, *J* = 7.90, 14.40Hz, 1H, CH_2-NH_2), 2.71 (dd, *J* = 3.80, 14.40Hz, 1H, CH_2-NH_2), 3.73 (s, 3H, OCH_3), 4.02 (d, *J* = 5.27Hz 2H, Ar-CH_2-

Ar), 4.86 (dd, *J* = 3.80, 7.90 Hz, 1H, Ar-CH-OH), 6.65-6.74 (m, 3H, Ar-H), 7.12-7.51 (m, 4H, Ar-H), 7.50 (d, *J* = 7.61Hz, 1H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 38.55, 48.23, 55.17, 70.35, 111.20, 114.71, 121.10, 126.35, 126.95, 127.51, 129.47, 130.64, 136.89, 140.94, 142.44, 159.71.

2-Amino-1-(2-(2-methoxybenzyl)phenyl)ethanol (13b). Yield (68%). ^{1}H NMR (300 MHz, $CDCl_3$): δ 1.93 (bs, 2H, NH_2), 2.72 (dd, *J* = 8.24, 12.91Hz, 1H, CH_2-NH_2), 2.86 (dd, *J* = 3.57, 12.91Hz, 1H, CH_2-NH_2), 3.85 (s, 3H, OCH_3), 4.01 (s, 2H, Ar-CH_2-Ar), 4.84 (dd, *J* = 3.57, 8.24Hz, 1H, Ar-CH-OH), 6.81-6.90 (m, 3H, Ar-H), 7.09 (d, *J* = 7.42Hz, 1H, Ar-H), 7.19-7.31 (m, 3H, Ar-H), 7.55 (d, *J* = 7.69Hz, 1H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 31.93, 48.39, 55.17, 70.52, 110.04, 120.35, 125.93, 126.41, 127.13, 127.34, 128.89, 129.74, 130.12, 136.70, 141.16, 156.91.

3-Methoxy-9-aminomethyl-9,10-dihydroanthracene (4). CH_3SO_3H (10 mL) was added to 2-amino-1-[2-(3-methoxybenzyl)phenyl]ethanol **13a** (1 g, 3.89 mmol) and the reaction mixture was stirred at 25 °C for 12 h. The reaction mixture was cooled to 0 °C with ice and quenched by adding ice-cold NaOH solution to a basic pH. Water (15 mL) was added and the turbid solution was extracted with CH_2Cl_2 (3 × 25 mL). The combined CH_2Cl_2 extracts were washed with water, brine, dried (Na_2SO_4) and evaporated under reduced pressure to give an brown oil which was purified by MPLC using CH_2Cl_2:CH_3OH (9:1) as eluent to give 0.322 g (35%) of 3-methoxy-9-aminomethyl-9,10-dihydroanthracene (**4**), which was subsequently converted into its oxalate salt.

3-Methoxy-9-aminomethyl-9,10-dihydroanthracene (4). Yield (35%). mp 190-192 ºC (oxalate). ^{1}H NMR (300 MHz, $CDCl_3$): δ 1.91 (s, 2H, NH_2), 2.77-3.10 (m, 2H, CH_2-NH_2), 3.79 (s, 3H, OCH_3), 3.83 (d, *J* = 18.74Hz, 1H, Ar-CH_2-Ar), 3.92-3.96 (m, 1H, Ar-CH-Ar), 4.08 (d, *J* = 18.90Hz, 1H, Ar-CH_2-Ar), 6.75-6.84 (m, 2H, Ar-H), 7.19-7.32 (m, 5H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 35.49, 47.75, 49.08, 55.40, 112.09, 113.40, 126.47, 126.70, 128.07, 128.43, 129.36, 129.68, 135.97, 137.50, 137.89, 158.49. Anal. ($C_{16}H_{17}N_1O_1 \cdot C_2H_2O_4$): C, H, N.

4-Methoxy-9-aminomethyl-9,10-dihydroanthracene (5). PPA (10 mL) was added to 2-amino-1-(2-(2-methoxybenzyl)phenyl)ethanol **13b** (1 g, 3.89 mmol) and the viscous mixture was heated at 65 °C (6 h) with continuous stirring. The reaction mixture was quenched with crushed ice and made basic with 10% NaOH solution. The turbid solution was then extracted with CH_2Cl_2 (3 × 25 mL). The combined CH_2Cl_2 layers extracts were washed with water, brine, dried (Na_2SO_4) and evaporated under reduced pressure to give a brown oil which was purified by MPLC using CH_2Cl_2:CH_3OH (9:1) as eluent to give 0.138g (15%) of 4-methoxy-9-aminomethyl-9,10-dihydroanthracene (**5**), which was subsequently converted into its oxalate salt.

4-Methoxy-9-aminomethyl-9,10-dihydroanthracene (5). Yield (15%). mp 187-190 ºC (oxalate). ^{1}H NMR (300 MHz, $CDCl_3$): δ 1.51 (s, 2H, NH_2), 2.80 (dd, *J* = 7.69, 12.91Hz, 1H, CH_2-NH_2), 2.89 (dd, *J* = 6.56, 12.91Hz, 1H, CH_2-NH_2), 3.87 (d, *J* = 18.40Hz, 1H, Ar-CH_2-Ar), 3.86 (s, 3H, OCH_3), 4.11 (d, *J* = 18.68Hz, 1H, Ar-CH_2-Ar), 4.38-4.42 (m, 1H, Ar-CH-Ar), 6.79 (d, *J* = 8.24Hz, 1H, Ar-H), 6.91 (d, *J* = 7.41Hz, 1H, Ar-H), 7.16-

7.33 (m, 5H, ArH). ^{13}C NMR (75 MHz, $CDCl_3$): δ 35.46, 43.93, 47.21, 55.57, 108.25, 120.42, 126.50, 126.64, 127.27, 128.03, 128.74, 136.29, 138.03, 138.17, 156.90. Anal. ($C_{16}H_{17}N_1O_1 \cdot C_2H_2O_4 \cdot 0.25\ H_2O$): C, H, N.