propyl)hydroxymethylene]-(+)-camphorato]europium-(III).[8] No racemization was detected.

The N-methylation sequence is also applicable to unprotected amino acids. For example, exposure of a 1.5 M aqueous solution of L-leucine to 1.0 equiv of 37% aqueous formaldehyde solution and 2.3 equiv of cyclopentadiene for 5 h at ambient temperature followed by treatment of the crude Diels–Alder adduct (0.1 M in $CHCl_3$/TFA, 1:1) with 3.0 equiv of triethylsilane at room temperature for 15 h provided upon workup a 70% yield of *N*-methyl-L-leucine.

The immonium ion generated during the course of the heterocycloreversion process (eq 3) can also be reduced by employing sodium cyanoborohydride. For example, treatment of a 0.02 M solution of azanorbornene **2** as its trifluoroacetate salt in methanol with 20 equiv of sodium cyanoborohydride provides after 8 h at ambient temperature an 81% yield of *N*-methyl-L-phenylalanyl-L-leucine methyl ester (**3**). No racemization is observed if trifluoroacetic acid is added as required during the course of the reaction to maintain the pH of 3.5–4.0.

The general N-methylation sequence detailed above should be of considerable use in peptide synthesis. The uniqueness of this new method is that both transformations are conducted in acidic medium, thus avoiding complications due to base-sensitive protecting groups and racemization.[10,11]

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(8) Employing DL-*N*-methylphenylglycine methyl ester, enantiomeric separations at 300 MHz in $CDCl_3$ of ca. 103 Hz were realized in the presence of 0.8 molar equiv of lanthanide shift reagent.

(9) Huguenin, R. L.; Boissonnas, R. A. *Helv. Chim. Acta* **1961**, *44*, 213.

(10) All new compounds have been fully characterized by IR, NMR, $[\alpha]_D$, and MS and/or combustion analysis.

(11) The following experimental employing H-Tyr-OMe·HCl serves as a general procedure for the two-step N-methylation sequence. To a homogeneous solution of H-Tyr-OMe·HCl (638 mg, 2.7 mmol) in 1.8 mL of water were added with vigorous stirring cyclopentadiene (0.50 mL, 6.1 mmol) and an aqueous solution of 37% formaldehyde (0.24 mL, 3.0 mmol). After 1 h at ambient temperature, the heterogeneous reaction mixture was washed with hexane and neutralized with 5% sodium bicarbonate solution. The product was isolated by extraction with methylene chloride. The combined organic extracts were dried over anhydrous magnesium sulfate and concentrated in vacuo. The residue was purified by flash chromatography on silica gel. Elution with methylene chloride/methanol/ammonium hydroxide, 96:3:1, provided 654 mg (87%) of a diastereomeric mixture (2:1) of 2-azanorbornenes, which were used directly in the next reaction. To a solution of a portion of the above 2-azanorbornene adducts (311 mg, 1.14 mmol) in 5.7 mL of chloroform was added 5.7 mL of trifluoroacetic acid and triethylsilane (0.55 mL, 3.42 mmol). The resulting homogeneous reaction mixture was stirred at ambient temperature under argon. After 20 h the solvent was removed under reduced pressure. The crude yellow product was dissolved in 2.0 mL of chloroform, treated with 4.0 mL of 10% hydrochloric acid, and washed with hexane/ether, 1:1. The aqueous layer was neutralized with 5% sodium bicarbonate solution and the product was isolated by extraction with methylene chloride. The combined organic extracts were dried over anhydrous magnesium sulfate. Removal of the solvent under reduced pressure afforded 219 mg (82%) of Me-Tyr-OMe as an oil. Purification of the product by flash chromatography on silica gel employing chloroform/methanol/ammonium hydroxide, 96:3:1, provided after recrystallization from methylene chloride 179 mg (75%) of Me-Tyr-OMe: mp 109–111 °C; $[\alpha]_D$ +35.4° (*c* 1.08, EtOH) [lit.[9] mp 109–111 °C; $[\alpha]_D$ +34.5° (*c* 1.6, EtOH)].

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Additions and Corrections

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Richard E. Moore,* Adrian J. Blackman, Chad E. Cheuk, Jon S. Mynderse, Gayle K. Matsumoto, Jon Clardy, Ronald W. Woodard, and J. Cymerman Craig. Absolute Stereochemistries of the Aplysiatoxins and Oscillatoxin A.

Page 2489. The identities of O10 and C31 should be reversed in the X-ray drawing in Figure 2.