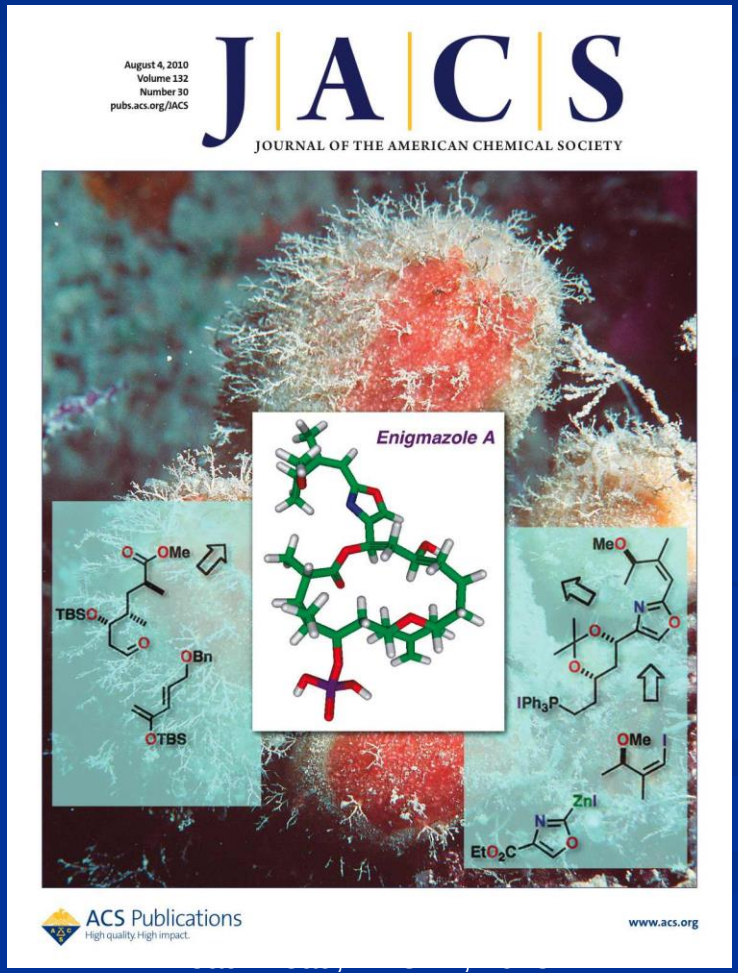
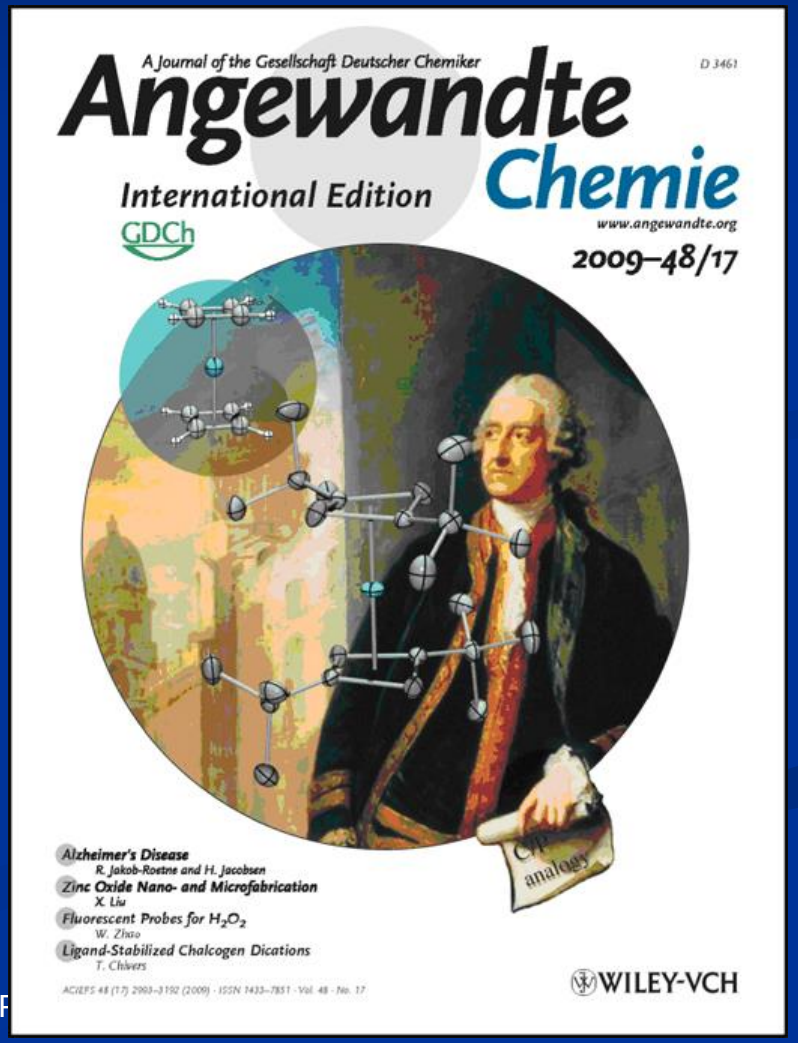
Lecture de publications contemporaines



- Un grand nombre de journaux
  - *Journal of the American Society (JACS)*
  - *Journal of Organic Chemistry*
  - *Angewandte Chemie*
  - *Tetrahedron Letters*
  - *Etc.*



- Quelques exemples de publications
- Toutes n'ont pas le même objectif
  - Nouvelle synthèse
  - Optimisation de réaction
  - Review…
- Points communs : comment est construite une publication ?

- Anglais
- Titre / Résumé

Scalable, Stereocontrolled Total Syntheses of (±)-Axinellamines A and B

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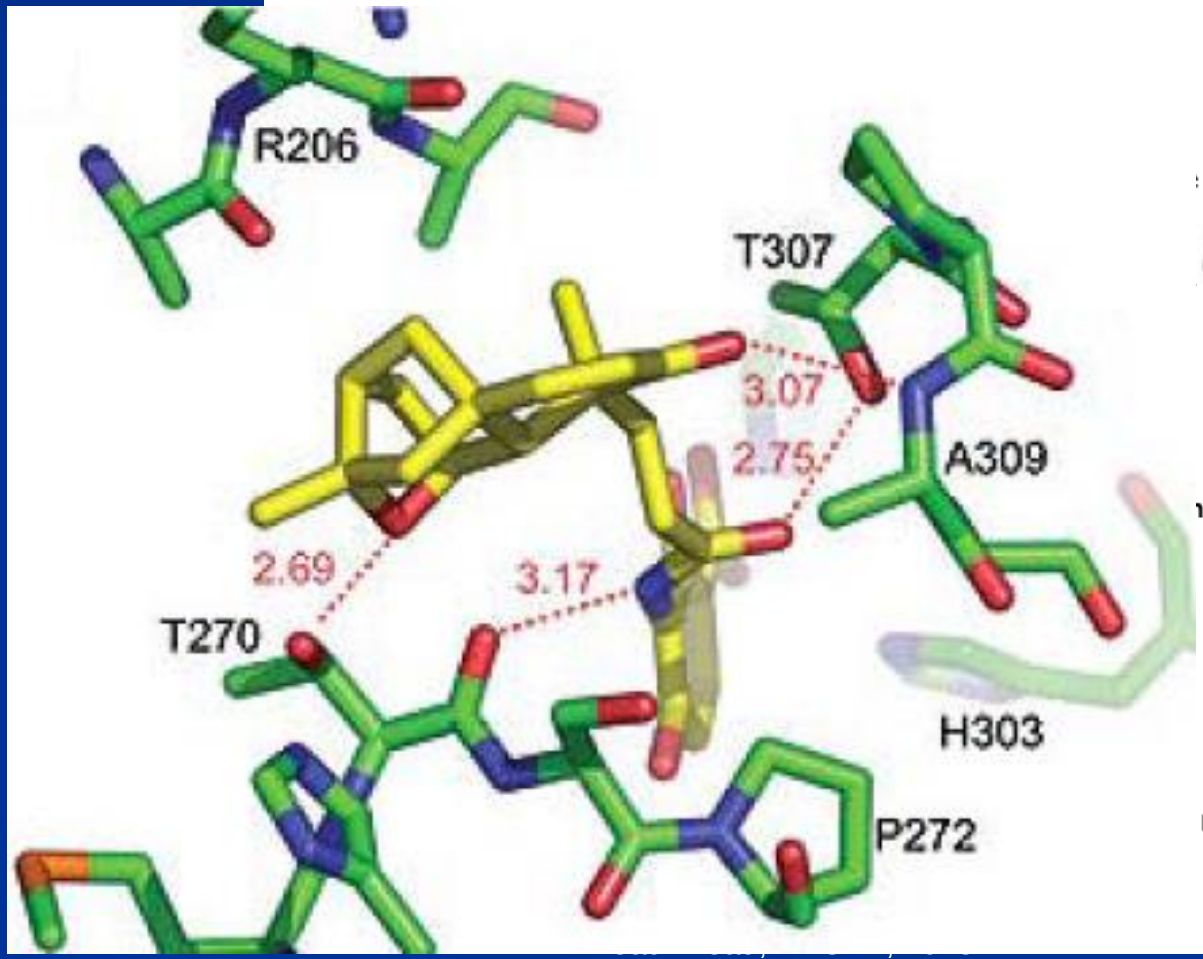
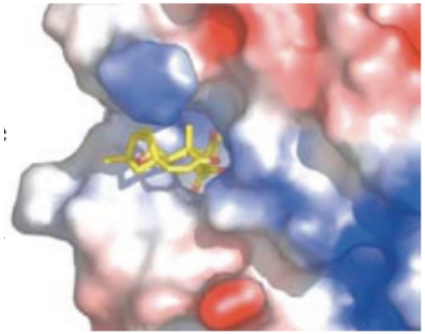
- Auteurs (équipe qui réalise le travail)
- Laboratoire
- Résumé permet de décrire rapidement ce qui va être traité

ABSTRACT: The development of a simple, efficient, scalable, and stereocontrolled synthesis of a common intermediate en route to the axinellamines, massadines, and palau'amine is reported. This completely new route was utilized to prepare the axinellamines on a gram scale. In a more general sense, three distinct and enabling methodological advances were made during these studies: (1) an ethylene glycol-assisted Pauson–Khand cycloaddition reaction, (2) a Zn/In-mediated Barbier-type reaction, and (3) a $TfNH_2$-assisted chlorination–spirocyclization.

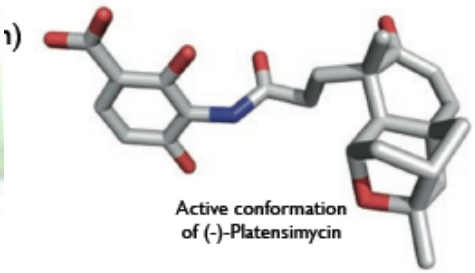
- Rappel de l'intérêt du travail concerné
  - Utilité de la réaction étudiée
  - Rôle de la molécule synthétisée

Isolation and Biology

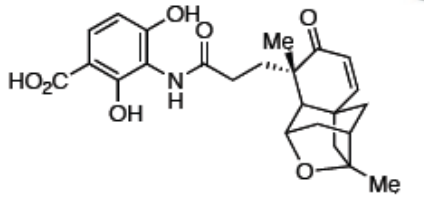




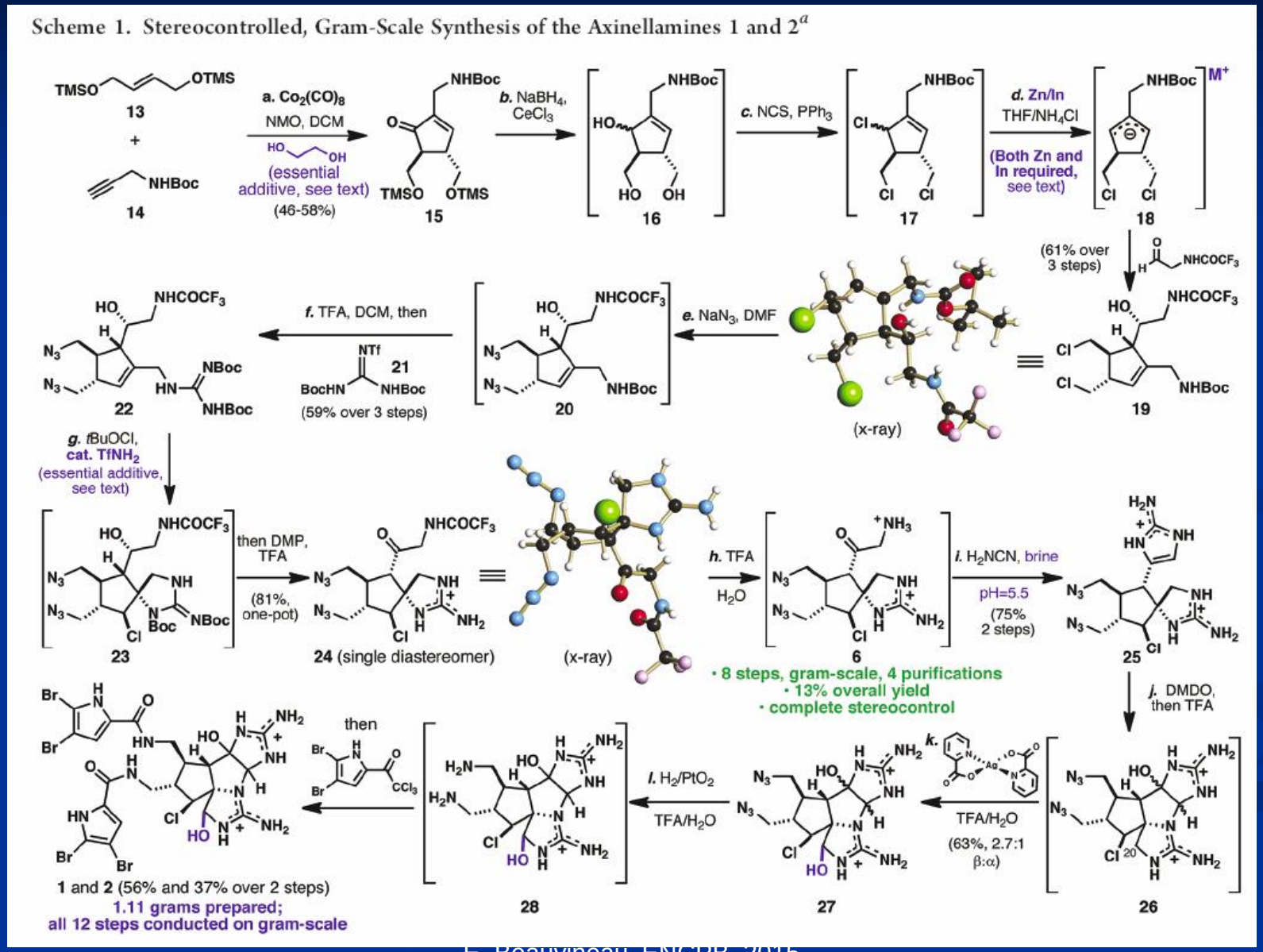
X-ray structure of Platensimycin bound to ecFabF(C163Q)



Active conformation of (-)-Platensimycin



Description du schéma de synthèse



- Description des conditions opératoires / protocoles (souvent brefs et austères)

[a] Reagents and conditions: (a) $Co_2(CO)_8$, NMO, ethylene glycol, 4 Å molecular sieves, DCM, rt, 12 h, 46–58%; (b) $NaBH_4$, $CeCl_3 \cdot 7H_2O$, MeOH, 0 °C to rt, 12 h; (c) PPh_3, NCS, DCM, 0 °C to rt, 12 h; (d) Zn, In, 2,2,2-trifluoro-*N*-(2-oxoethyl)acetamide, THF, 6% aq NH_4Cl, rt, 3 h, 61% for three steps; (e) NaN_3, DMF, 85 °C, 16 h; (f) TFA, DCM, rt; then **21**, Et_3N, DCM, rt, 12 h, 59% for three steps; (g) ^tBuOCl, $TfNH_2$ (0.25 equiv), DCM, 0 °C; then DMP, TFA:DCM = 1:10, rt, 12 h, 81%; (h) TFA:H_2O = 1:1, 70 °C, 36 h, quantitative if isolated, carried to next step directly; (i) H_2NCN, brine, NaOH (pH 5.5), 70 °C, 4 h, 75% for two steps; (j) DMDO, TFA:H_2O = 5:95; then TFA:DCM = 1:1, rt, 24 h; (k) silver(II) picolinate, TFA:H_2O = 1:9, rt, 1.5 h, 63% yield over two steps, 2.7:1 β:α; (l) H_2, Pt_2O, TFA:H_2O = 5:95, 1 h; then 2,3-dibromo-5-trichloroacetylpyrrole, DIEA (pH 8.0), MeCN, rt, 24 h, 56% and 37% over two steps for **1** and **2**

- Résultats expérimentaux

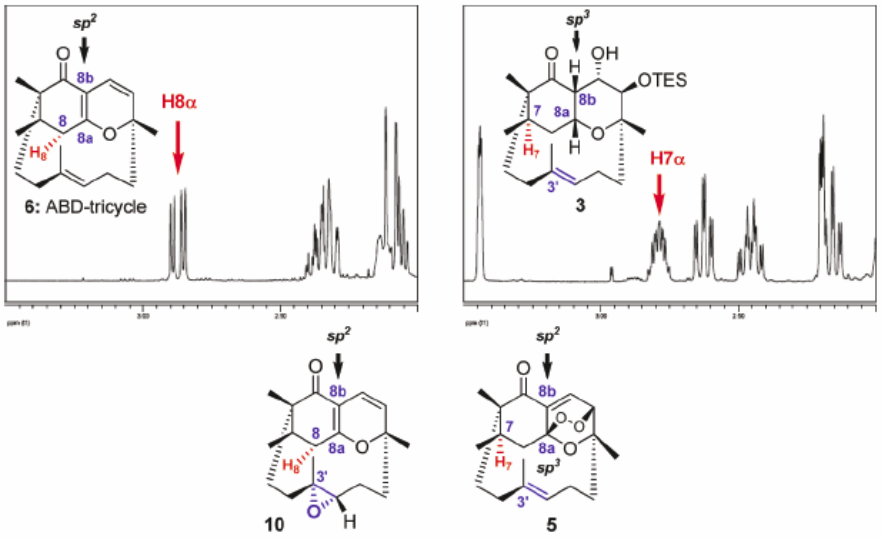


Figure 3. ^1H NMR of ABD-tricycle **6** and β-hydroxyketone **3**.

- Souvent, spectres non fournis :

(±)-(3*R*,4a*R*,7a*R*)-3-Bromohexahydrocyclopenta[*b*]pyran-2(3*H*)-one (6b). To a solution of lactone **5b** (557 mg, 3.97 mmol) in THF (14 mL) was added $LiN(TMS)_2$ (1.0 M solution in THF, 4.45 mL, 4.45 mmol) at −78 °C. The mixture was stirred at −78 °C for 1 h followed by the addition of TMSCl (630 μL, 4.96 mmol). The reaction mixture was allowed to warm to room temperature and stirred for 0.5 h. The mixture was again cooled to −78 °C followed by the addition of NBS (1.06 g, 5.96 mmol) in THF (9 mL). The mixture was warmed to room temperature and stirred for 1 h. The reaction mixture was quenched with H_2O and extracted with Et_2O (2×). The combined organic layer was dried over anhydrous $MgSO_4$ and concentrated. The residue was purified by flash column chromatography (hexane/EtOAc = 5) to give bromolactones **6b** (680 mg, 3.10 mmol, 78%) and **6b′** (46.1 mg, 0.210 mmol, 5%). **6b**: colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$) δ 5.15 (sextet, 1H, J = 3.2 Hz), 4.46 (t, 1H, J = 3.2 Hz), 2.57−2.47 (m, 2H), 2.12−1.92 (m, 3H), 1.85−1.75 (m, 1H), 1.65−1.54 (m, 1H), 1.50−1.41 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 168.0, 83.4, 39.4, 34.5, 33.9, 33.1, 32.3, 23.5; FT-IR (film) 2957, 2871, 1746, 1470, 1452, 1439, 1351, 1291, 1260, 1204, 1142, 1117, 1078, 1053, 1024 cm^{-1}; HRMS (FAB) m/z calcd for $C_8H_{12}{}^{79}BrO_2$ $[M + H]^+$ 219.0021, found 218.9990. **6b′**: colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$) δ 4.79 (td, 1H, J = 5.6, 3.6 Hz), 4.59 (dd, 1H, J = 13.2, 5.6 Hz), 2.80−2.73 (m, 1H), 2.48−2.37 (m, 1H), 2.08−1.81 (m, 5H), 1.63−1.45 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 169.0, 82.9, 43.2, 39.5, 36.6, 33.4, 32.4, 23.1; FT-IR (film) 2957, 2872, 1752, 1658, 1639, 1457, 1439, 1316, 1261, 1171, 1132, 1076, 1045 cm^{-1}; HRMS (FAB) m/z calcd for $C_8H_{12}{}^{79}BrO_2$ $[M + H]^+$ 219.0021, found 219.0011.

Partie expérimentale

Partie analytique

- En fin d'article
  - Références / Bibliographie

REFERENCES

(1) For isolations of phomactins A–G, see: (a) Sugano, M.; Sato, A.; Iijima, Y.; Oshima, T.; Furuya, K.; Kuwano, H.; Hata, T.; Hanzawa, H. *J. Am. Chem. Soc.* **1991**, *113*, 5463. (b) Sugano, M.; Sato, A.; Iijima, Y.; Oshima, T.; Furuya, K.; Haruyama, H.; Yoda, K.; Hata, T. *J. Org. Chem.* **1994**, *59*, 564. (c) Sugano, M.; Sato, A.; Iijima, Y.; Oshima, T.; Furuya, K.; Kuwano, H.; Hata, T. *J. Antibiot.* **1995**, *48*, 1188.

(2) For isolation of phomactin H, see:Koyama, K.; Ishino, M.; Takatori, K.; Sugita, T.; Kinoshita, K.; Takahashi, K. *Tetrahedron Lett.* **2004**, *45*, 6947.

(3) For isolation of related Sch 47918, see: (a) Chu, M.; Truumees, I.; Gunnarsson, I.; Bishop, W. R.; Kreutner, W.; Horan, A. C.; Patel, M. G.; Gullo, V. P.; Puar, M. S. *J. Antibiot.* **1993**, *46*, 554. For isolations of related (+)-Sch 49026, (+)-Sch 49027, and (+)-Sch 49028, see:(b) Chu, M.; Patel, M. G.; Gullo, V. P.; Truumees, I.; Puar, M. S.; McPhail, A. T. *J. Org. Chem.* **1992**, *57*, 5817. For correcting the assignment of Sch 49028, see:(c) Cheing, J. W. C.; Goldring, W. P. D.; Pattenden, G. *Chem. Commun.* **2003**, 2788.

(4) For biosynthesis, see: Tokiwano, T.; Fukushi, E.; Endo, T.; Oikawa, H. *Chem. Commun.* **2004**, 1324.

Importance du travail d'équipe, des collaborations et de la publication de ses travaux

Conclusion

- Pour comprendre une publication
  - Connaître les grands types de réactions chimiques
  - Connaître les modes de représentations des molécules
  - Connaître les différentes analyses possibles (spectroscopie)
  - Comprendre l'anglais
- Pour le moment : impossible
  - … et dans 2 ans ?