increased RFRP-3 neuronal activity in DMH nuclei and vice versa.

This work opens up a new avenue of research to support the role of circadian system to comprehend gonadal development during the maturation of reproductive axis in mice, suggesting the possibility of a common mechanism in the reproductive regulation of both seasonal and continuous breeders. This communication also indicates that temporal phase relation between the circadian serotoninergic and dopaminergic oscillations may modulate gonadal development during the process of sexual maturity in the laboratory mice. Further, there would be many inhibitory neuroendocrine mechanisms involved in the prepubertal and drug-induced (8 h relation) reproductive suppression, and RFRP-3 appears to be one of these factors. Additional studies involving administration of RFRP-3 in adult or 12 h mice and its antagonist in prepubertal or 8 h mice may strengthen the evidence supporting this suggestion.

1. Pittendrigh, C. S., *Annu. Rev. Physiol.*, 1993, **55**, 16–54.
2. Hastings, M. H., Reddy, A. B. and Maywood, E. S., *Nature Rev. Neurosci.*, 2003, **4**(8), 649–661.
3. Akhtar, R. A. *et al.*, *Curr. Biol.*, 2002, **12**(7), 540–550.
4. Yoo, S. H. *et al.*, *Proc. Natl. Acad. Sci. USA*, 2004, **101**(15), 5339–5346.
5. Guo, H., Brewer, J., Champhekar, A., Harris, R. and Bittman, E., *Proc. Natl. Acad. Sci. USA*, 2005, **102**(8), 3111–3116.
6. Nagoshi, E., Saini, C., Bauer, C., Laroche, T., Naef, F. and Schibler, U., *Cell*, 2004, **119**(5), 693–705.
7. Carr, A. J., Johnston, J. D., Semikhodskii, A. G., Nolan, T., Cagampang, F. R., Stirland, J. A. and Loudon, A. S., *Curr. Biol.*, 2003, **13**(17), 1543–1548.
8. Johnson, M., *Reprod. Biomed.* (*Suppl. 1*), 2001, **4**, 39–45.
9. Gerhold, L. M., Rosewell, K. L. and Wise, P. M., *J. Neurosci.*, 2005, **25**(1), 62–67.
10. Kriegsfeld, L. J., Silver, R., Gore, A. C. and Crews, D., *J. Neuroendocrinol.*, 2002, **14**(9), 685–690.
11. Lincoln, G. A., Andersson, H. and Loudon, A., *J. Endocrinol*., 2003, **179**(1), 1–13.
12. Wilson, J. M. and Meier, A. H., *Chronobiology*, 1987, **14**, 255.
13. Haldar, C. and Yadav, R., *J. Endocrinol. Reprod.*, 2006, **10**(1), 32–42.
14. Chaturvedi, C. M. and Yadav, S., *Gen. Comp. Endocrinol.*, 2013, **190**, 203–213.
15. Yadav, S. and Chaturvedi, C. M., *Gen. Comp. Endocrinol.*, 2015, **217–218**, 54–61.
16. Kumar, P., Pati, A. K., Mohan, J., Sastry, K. V., Tyagi, J. S. and Chaturvedi, C. M., *Chronobiol. Int.*, 2009, **26**(1), 28–46.
17. Smith, J. T. and Clarke, I. J., *Trends Endocrinol. Metab*., 2010, **21**(4), 255–260.
18. Sethi, S., Tsutsui, K. and Chaturvedi, C. M., *Neuroendocrinology*, 2010, **91**(2), 189–199.

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Global influence of Cancer Statistics articles

The contribution or impact of a research article can be assessed based on the number of times the article is cited by other research articles. Each year, *CA – A Cancer Journal for Clinicians* publishes a series of articles called Cancer Statistics, which receives an extremely high number of citations. Over the years, Cancer Statistics articles have provided important information for cancer researchers and clinicians throughout the world. Here we report the global influence of Cancer Statistic articles and demonstrate the shift in their influence toward East Asia, where researchers have significantly increased their frequency in citing Cancer Statistics articles while showing a decreasing trend in citations by American researchers. Data for this correspondence were retrieved from the SCI-EXPANDED database of the *Web of Science* (*WoS*) of Thomson Reuters.

Figure 1 shows the annual number of citations of Cancer Statistics articles published from 2001 to 2011. During this time, these articles in general showed a citation peak in the second year of publication, as well as a higher citation peak with each successive year, indicating an increasing trend in their influence and readership. Table 1 shows the global influence of Cancer Statistics articles. As of the end of 2012, ‘Cancer Statistics, 2001’ by Greenlee *et al.*[1] has been cited in 2237 research papers by 10,401 authors from 2109 institutions in 56 countries, and was published in 685 journals belonging to 99 *WoS* categories in science. ‘Cancer Statistics, 2008’ by Jemal *et al.*[2] has the highest number of citations as of TC2012 (total number of times cited since the paper was published to 2012). It has been cited in 5544 research papers by 25,811 authors from 4530 institutions in 83 countries. In the last decade, Cancer Statistics articles have significantly increased their global influence. The more recent articles of 2009, 2010, and 2011 did not have as many citations as ‘Cancer Statistics, 2008’ (ref. 2), since the recent articles had a shorter life and time to accumulate citations. However, length of time may not be the only factor. Further analysis revealed that a reduction in the US papers citing Cancer Statistics articles has contributed to their lower citations after 2008.

Table 2 compares the number of citations, as well as the percentage of total citations that Cancer Statistics articles received from the top 10 leading countries. Since Cancer Statistics articles showed a citation peak in the second year of publication, we limit the time-frame to the first two years of article life. Citations at the end of their year can be used as a proxy of their visibility in cancer research. Furthermore, it does not vary with time, unlike the total number of citations, which can be affected by the article life, and thus can be used to provide a fair comparison among articles. Cancer Statistics articles published after 2011 were not included, as they may not have reached their citation peak.

Table 1. Citation characteristics of Cancer Statistics, 2001–2011

Author	No. AU	AU	IN	CT	NJ	SC	TC2012	C/Y
Greenlee *et al.*[1]	4	10,401	2,109	56	685	99	2,237	172
Jemal *et al.*[3]	4	8,612	1,890	64	615	99	1,851	154
Jemal *et al.*[4]	6	10,489	1,932	59	648	99	2,088	190
Jemal *et al.*[5]	8	11,672	2,393	66	745	99	2,420	242
Jemal *et al.*[6]	8	12,443	2,429	63	742	105	2,608	290
Jemal *et al.*[7]	7	15,871	2,931	70	888	104	3,313	414
Jemal *et al.*[8]	6	19,769	3,661	79	1,015	107	4,087	584
Jemal *et al.*[2]	7	25,811	4,530	83	1,212	114	5,544	924
Jemal *et al.*[9]	6	23,579	4,220	79	1,087	106	4,877	975
Jemal *et al.*[10]	4	17,697	3,115	72	778	98	3,960	990
Jemal *et al.*[11]	6	9,299	2,075	74	597	87	1,628	543

No. AU, Number of authors in the cancer statistics article; AU, Number of authors cited; IN, Number of institutes cited; CT, Number of countries cited; SC, Number of *Web of Science* categories cited; NJ, Number of journals cited, C/Y, Citations/yr; TC2012, Total number of times cited since the paper was published to 2012.

Table 2. Cancer Statistics citation by the 10 leading countries from 2001 to 2011

Country	2001 TP (%)	2002 TP (%)	2003 TP (%)	2004 TP (%)	2005 TP (%)	2006 TP (%)	2007 TP (%)	2008 TP (%)	2009 TP (%)	2010 TP (%)	2011 TP (%)
USA	581 (88)	666 (90)	786 (85)	884 (83)	1,063 (80)	1,034 (72)	1,354 (73)	1,607 (70)	1,266 (66)	1,073 (67)	492 (30)
China	3 (0.45)	4 (0.54)	11 (1.2)	14 (1.3)	25 (1.9)	45 (3.1)	72 (3.9)	125 (5.5)	144 (7.5)	177 (11)	511 (31)
Germany	16 (2.4)	28 (3.8)	40 (4.3)	47 (4.4)	65 (4.9)	95 (6.6)	99 (5.4)	140 (6.1)	104 (5.4)	80 (5.0)	100 (6.2)
Italy	16 (2.4)	20 (2.7)	34 (3.7)	47 (4.4)	48 (3.6)	81 (5.6)	96 (5.2)	116 (5.1)	101 (5.3)	85 (5.3)	78 (4.8)
Canada	27 (4.1)	17 (2.3)	38 (4.1)	52 (4.9)	47 (3.5)	68 (4.7)	95 (5.1)	107 (4.7)	101 (5.3)	84 (5.2)	50 (3.1)
Japan	11 (1.7)	17 (2.3)	28 (3.0)	24 (2.3)	52 (3.9)	45 (3.1)	57 (3.1)	91 (4.0)	68 (3.6)	50 (3.1)	70 (4.3)
UK	16 (2.4)	14 (1.9)	20 (2.2)	23 (2.2)	22 (1.7)	30 (2.1)	60 (3.3)	66 (2.9)	73 (3.8)	59 (3.7)	66 (4.1)
France	13 (2.0)	7 (1.0)	15 (1.6)	12 (1.1)	14 (1.1)	27 (1.9)	33 (1.8)	56 (2.5)	46 (2.4)	52 (3.2)	53 (3.3)
The Netherlands	17 (2.6)	9 (1.2)	10 (1.1)	11 (1.0)	23 (1.7)	33 (2.3)	48 (2.6)	52 (2.3)	45 (2.3)	26 (1.6)	47 (2.9)
Spain	N/A	4 (0.54)	6 (0.65)	10 (0.94)	19 (1.4)	31 (2.2)	31 (1.7)	55 (2.4)	62 (3.2)	28 (1.7)	50 (3.1)

TP, Total number of papers citing the Cancer Statistics article in its publication year and in the following year.

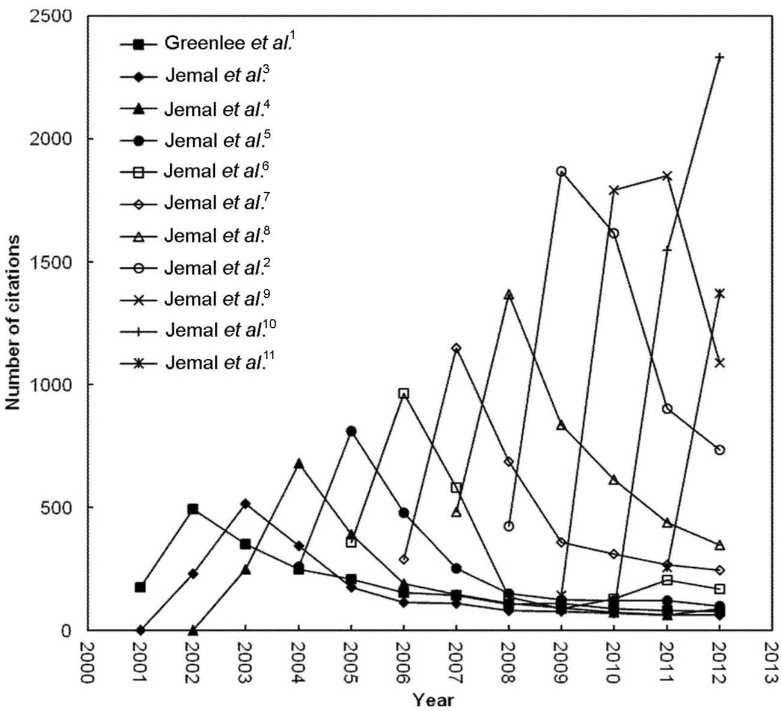

Figure 1. Citation trends of Cancer Statistics publications from 2001 to 2011.

The G7 countries (USA, Germany, Italy, Canada, Japan, the UK and France) were ranked among the top eight (Table 2). USA was the leading source of citations for Cancer Statistics articles, contributing as much as 90% of citations in 2002, but decreased to as low as 66% and 67% in 2009 and 2010 respectively, and then dropped to 30% in 2011. Despite showing a trend of decreasing percentage before 2008, the number of US papers citing Cancer Statistics was still increasing, from 581 papers in 2001 to 1607 papers in 2008. Unexpectedly, after 2008, the number showed a sharp decrease, dropping to 1073 papers in 2010, and 492 papers in 2011. On the contrary, China, has become a major source of citations for Cancer Statistics, in both number and percentage, over the same period of time. It overtook the US in 2011, publishing 31% of all papers citing Cancer Statistics. Japan and Korea also showed significant increase in the last decade. Cancer Statistics articles appeared to have played a more significant role in cancer research in East Asia after 2008. The increase was also observed for Italy, Germany and the UK, although not as significant as in Asian countries.

To sum up, Cancer Statistics articles had increased their global influence in cancer research in the last decade. However, their influence on cancer research in the US might be decreasing, as indicated by the much lower percentage and frequency of citations received from the US researchers. One possible reason could be that the content of Cancer Statistics articles were not in accordance with the cancer research agenda in the US, and thus these articles are not cited as often by the US researchers. Another reason could be the decrease in funding for cancer research after 2008. It was possible that the financial crisis of 2008 might have a negative influence in scholarship and funding that supported cancer research in the US. Based on the available data, it was not clear why such a significant drop in the US citations had occurred. Nevertheless, this result did indicate a sign of warning concerning cancer research in the US. Further research is needed to see if such a trend continues.

1. Greenlee, R. T., Hill-Harmon, M. B., Murray, T. and Thun, M., *CA – Cancer J. Clin.*, 2001, **51**, 15–36.
2. Jemal, A., Siegel, R., Ward, E., Hao, Y. P., Xu, J. Q., Murray, T. and Thun, M. J., *CA – Cancer J. Clin.*, 2008, **58**, 71–96.
3. Jemal, A., Thomas, A., Murray, T. and Thun, M., *CA – Cancer J. Clin.*, 2002, **52**, 23–47.
4. Jemal, A., Murray, T., Samuels, A., Ghafoor, A., Ward, E. and Thun, M. J., *CA – Cancer J. Clin.*, 2003, **53**, 5–26.
5. Jemal, A. *et al.*, *CA – Cancer J. Clin.*, 2004, **54**, 8–29.
6. Jemal, A. *et al.*, *CA – Cancer J. Clin.*, 2005, **55**, 10–30.
7. Jemal, A., Siegel, R., Ward, E., Murray, T., Xu, J. Q., Smigal, C. and Thun, M. J., *CA – Cancer J. Clin.*, 2006, **56**, 106–130.
8. Jemal, A., Siegel, R., Ward, E., Murray, T., Xu, J. Q. and Thun, M. J., *CA – Cancer J. Clin.*, 2007, **57**, 43–66.
9. Jemal, A., Siegel, R., Ward, E., Hao, Y. P., Xu, J. Q. and Thun, M. J., *CA – Cancer J. Clin.*, 2009, **59**, 225–249.
10. Jemal, A., Siegel, R., Xu, J. Q. and Ward, E., *CA – Cancer J. Clin.*, 2010, **60**, 277–300.
11. Jemal, A., Bray, F., Center, M. M., Ferlay, J., Ward, E. and Forman, D., *CA – Cancer J. Clin.*, 2011, **61**, 69–90.

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Adaptive modifications in lip and barbel of an endangered catfish *Amblyceps arunchalensis* Nath & Dey, 1989

The mountain streams of the Eastern Himalayas are perennial shallow water bodies, characterized by low temperature, highly turbulent current and sandy, rocky substratum[1]. Fishes are unique among vertebrates in that some of them, particularly catfishes exhibit external taste buds especially abundant on their barbels[2]. *Amblyceps arunchalensis* Nath and Dey, 1989 has limited distribution in the torrential water bodies of North East India (Figure 1 *b*). The fish falls in the endangered category[3]. So far only taxonomic data are available and key characters include unequal jaws, reduced rectal fold, tuberculated skin and a number of adaptive modifications suitable for torrential habitat. Taste buds and mucus pores are invariably present in lips and barbels, which serve as chemo and mechano receptors. In the present study we describe the characteristic differences observed in the structure of lips and barbels of *A. arunchalensis*.

Live specimens of *A. arunchalensis* were collected from Ranganadi river (Figure 1 *a*), a northern tributary of the Brahmaputra in Lakhimpur district, Assam, India. Fishes ($N = 5$) were in the range of total length (TL) = 8.28–10.69 cm and body weight (BW) = 4.43–8.55 g. For SEM analysis, barbels and lips of *A. arunchalensis* were removed with the help of a surgical blade and fixed in 3% glutarldehyde solution for 24 h and the prescribed methodology of SEM[4] was followed. Sputtering was done with gold palladium mixture for 6 min using Emitech-SC7620 sputter coater and was viewed in FESEM (ΣIGMA, Zeiss, Germany) at 5 kV. Sizes of the central pores of the taste buds were measured with IMAGE J software.

In catfishes, the sense of taste is principally used to guide them to food, thereby acting as a long-range receptor[5]. Similar studies in case of *Corydoras arcuatus* and *Tinca tinca* have shown that numerous taste buds are present which in turn have several microvilli[5,6]. Presence of microvilli help them in adhering to the substratum and also act as mechano-cum-sensory receptors. The presence of these spine-like microvilli increases the

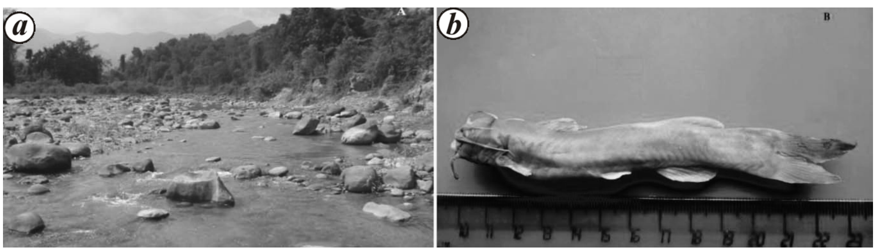

Figure 1. ***a***, Habitat of the fish, Ranganadi, Lakhimpur, Assam, India; ***b***, *Amblyceps arunchalensis*.