

第十六屆青杏醫學獎

獲獎人回顧及感言

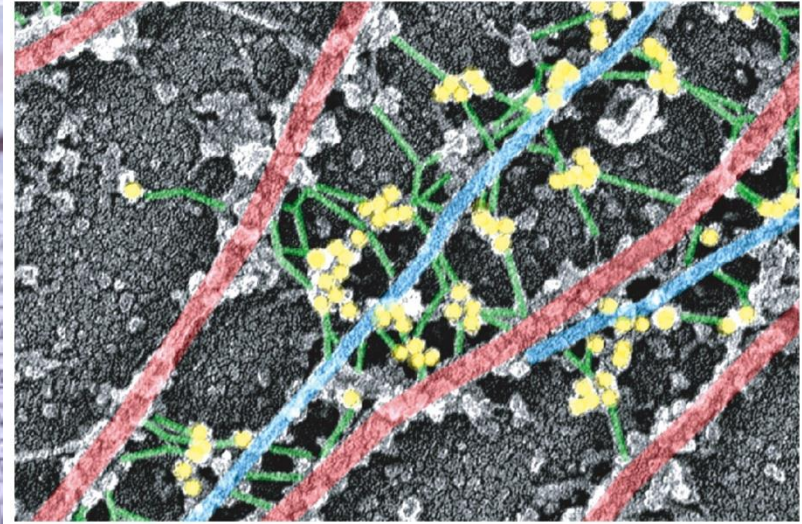


解剖學暨細胞生物學科（研究所）

錢宗良

8-31-2010

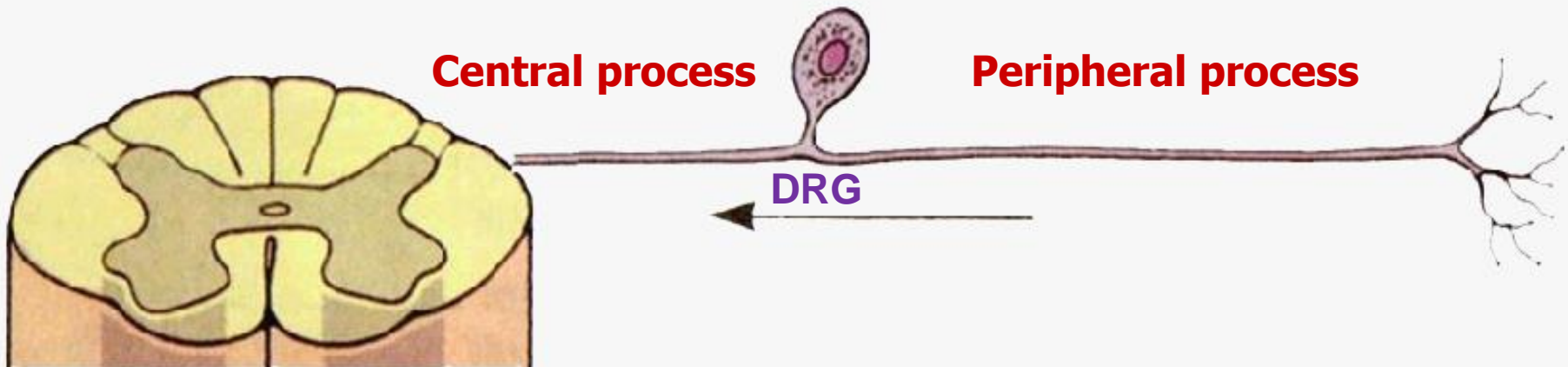
Nature Mutant for Neuronal Degeneration



- *Dystonia musculorum (dt)* mouse is a recessive hereditary sensory neuropathy of the mutant mouse, which is defective in *BPAG1* gene.
- Mice affected with *dt* are seemingly normal at birth, but by 10–12 days they begin twitching, writhing, and exhibiting uncoordinated movements.
- **BPAG1** cross-links the intermediate filaments and other cytoskeletons.

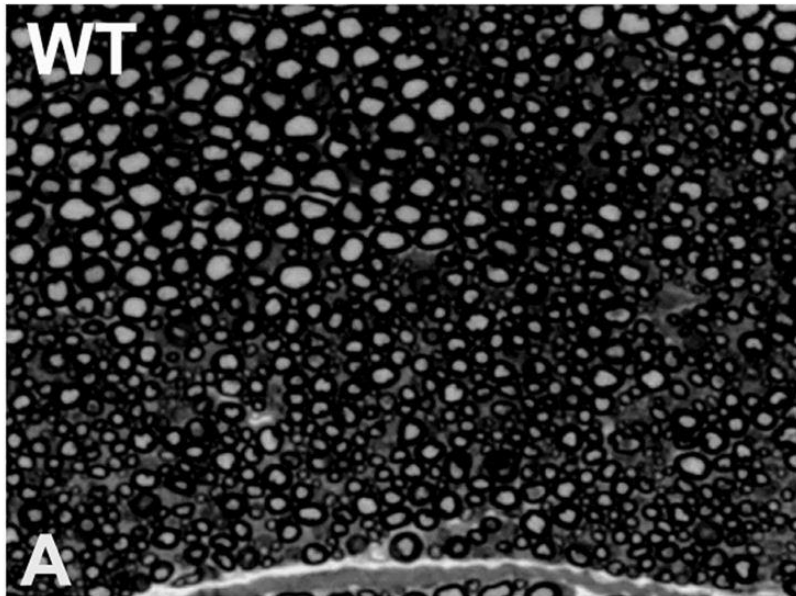
Aim:

To study the neural dysfunction and degeneration of primary sensory neurons in dorsal root ganglia (DRG) in *dt* mice

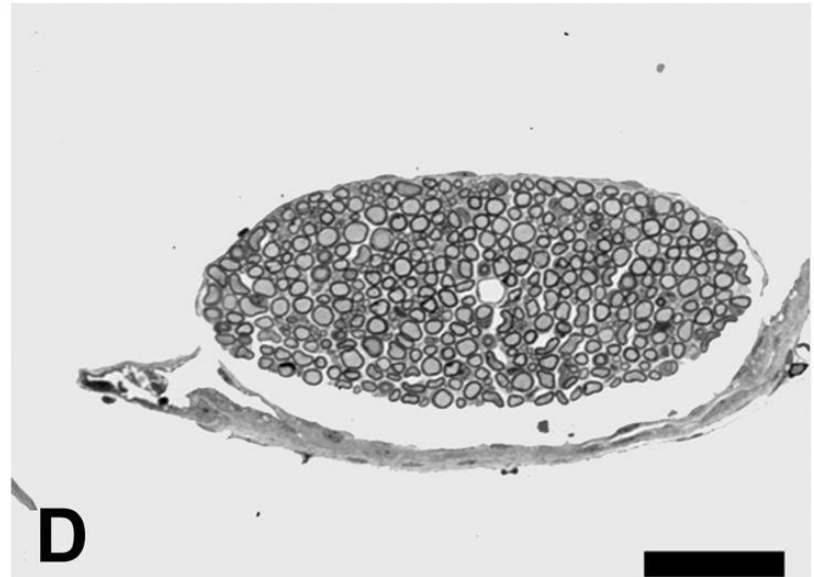
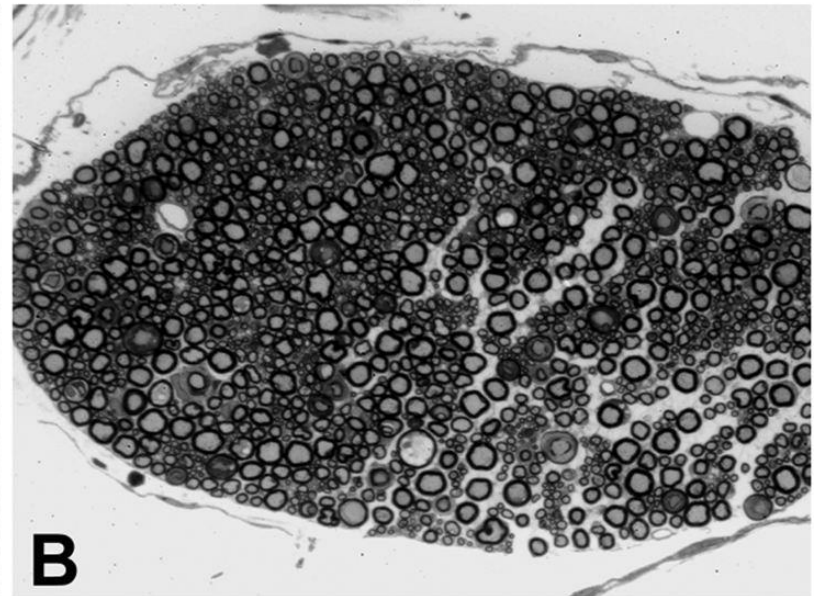


Peripheral and central processes from WT and *dt/dt* mice

Peripheral process

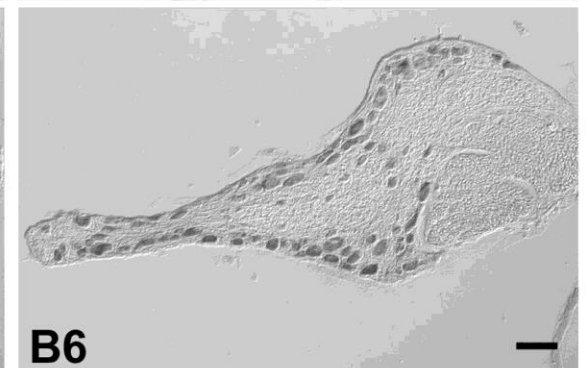
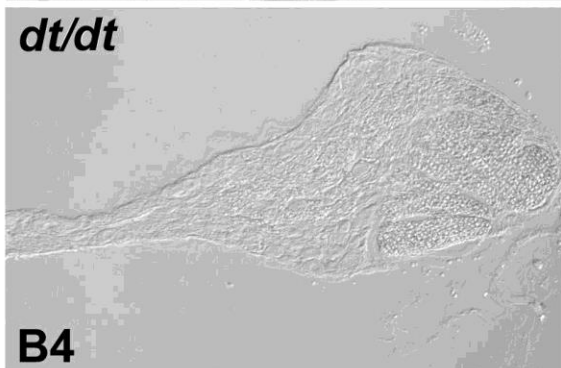
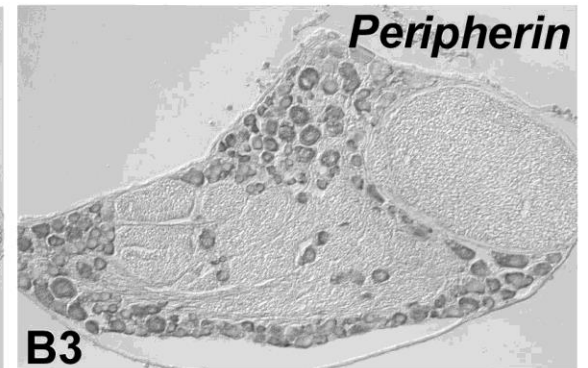
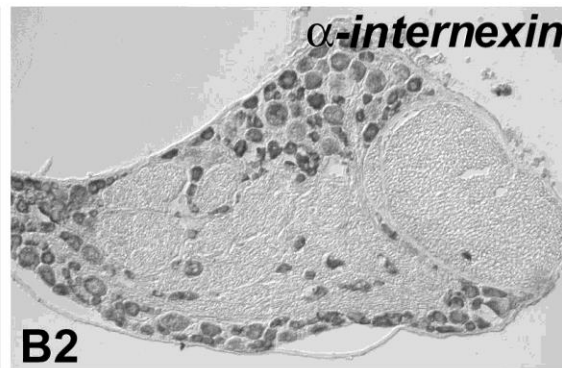
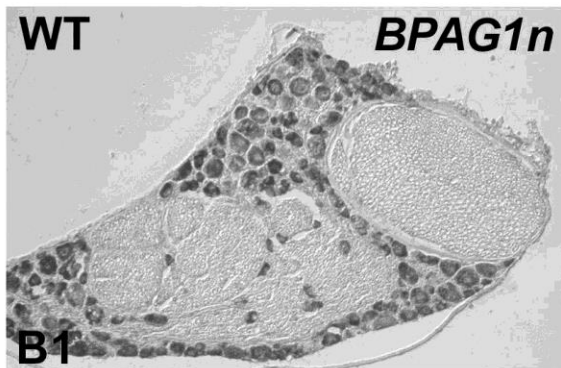
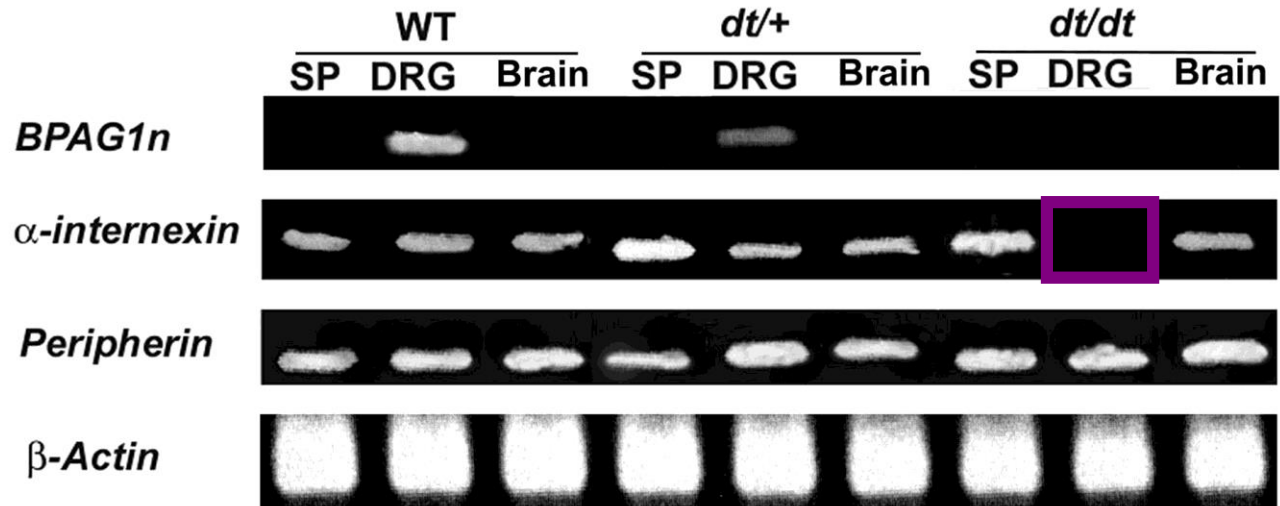


Central process

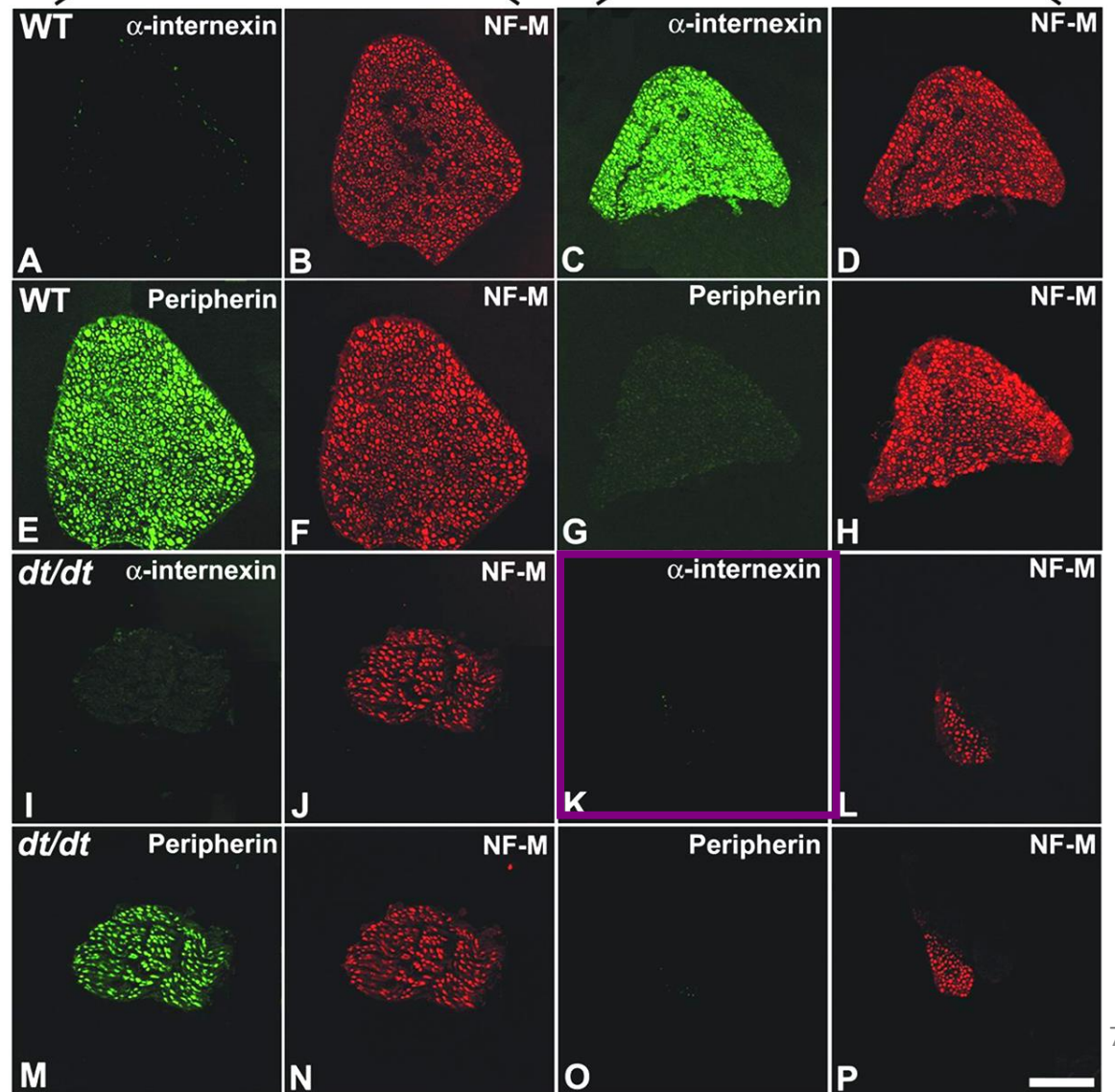
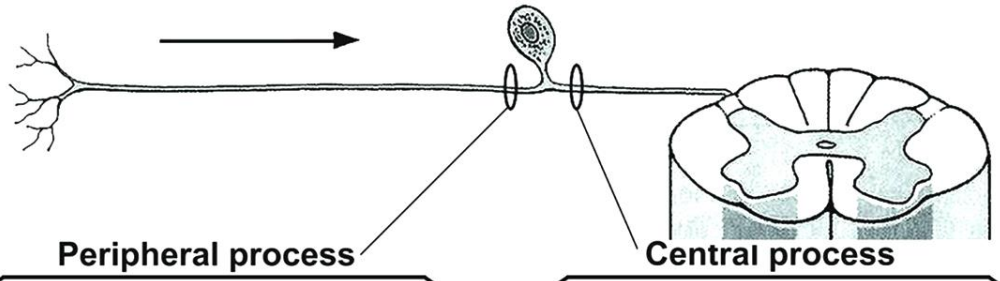


RT-PCR and in situ hybridization analysis

A



Expression of neuronal intermediate filaments in WT and *dt/dt* mice



α -interenxin is absent in the central process of adult *dt/dt* mice

Sensory and autonomic nerves degenerated in the skin of *dt* mutant

Fig. 6

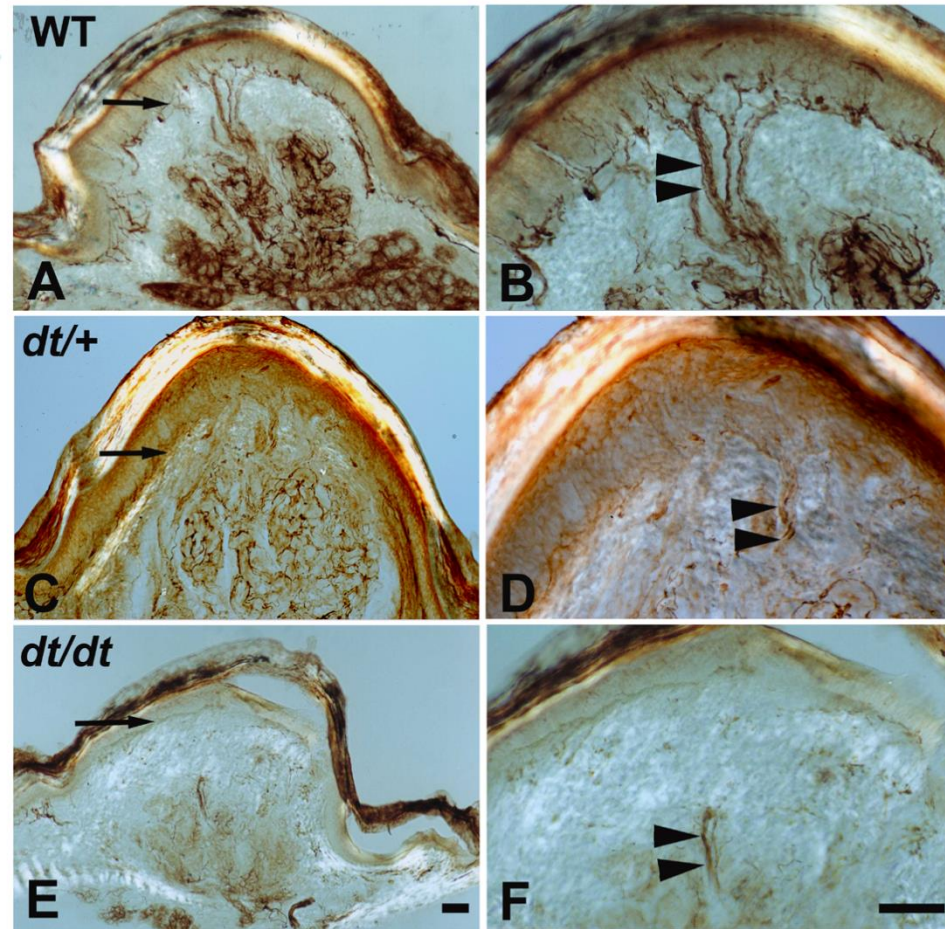
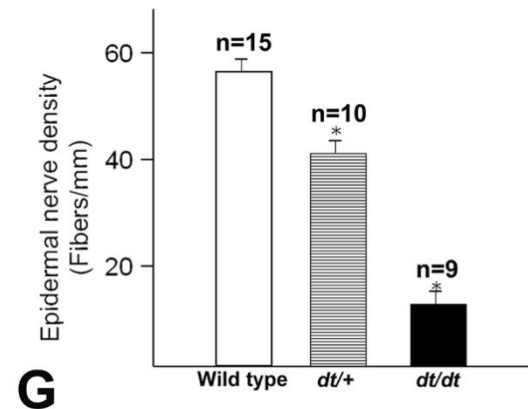
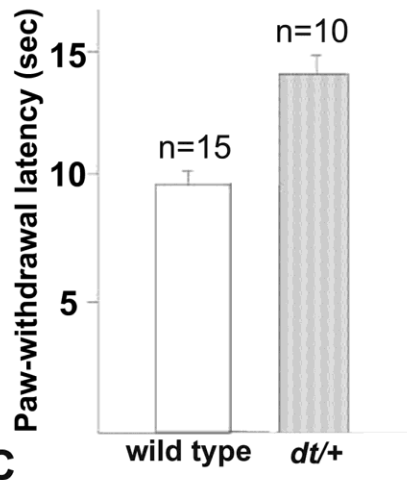
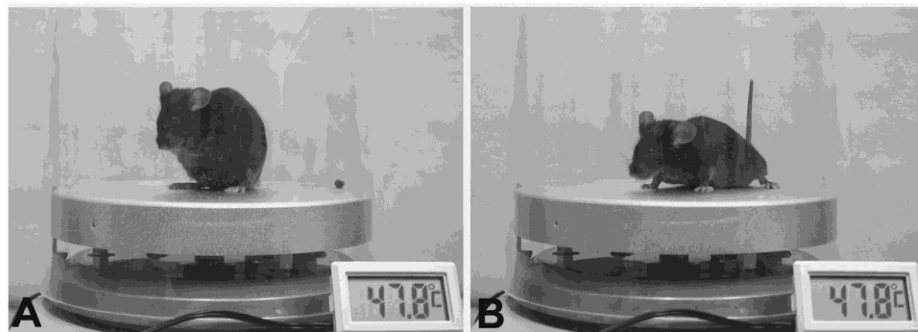


Fig. 7

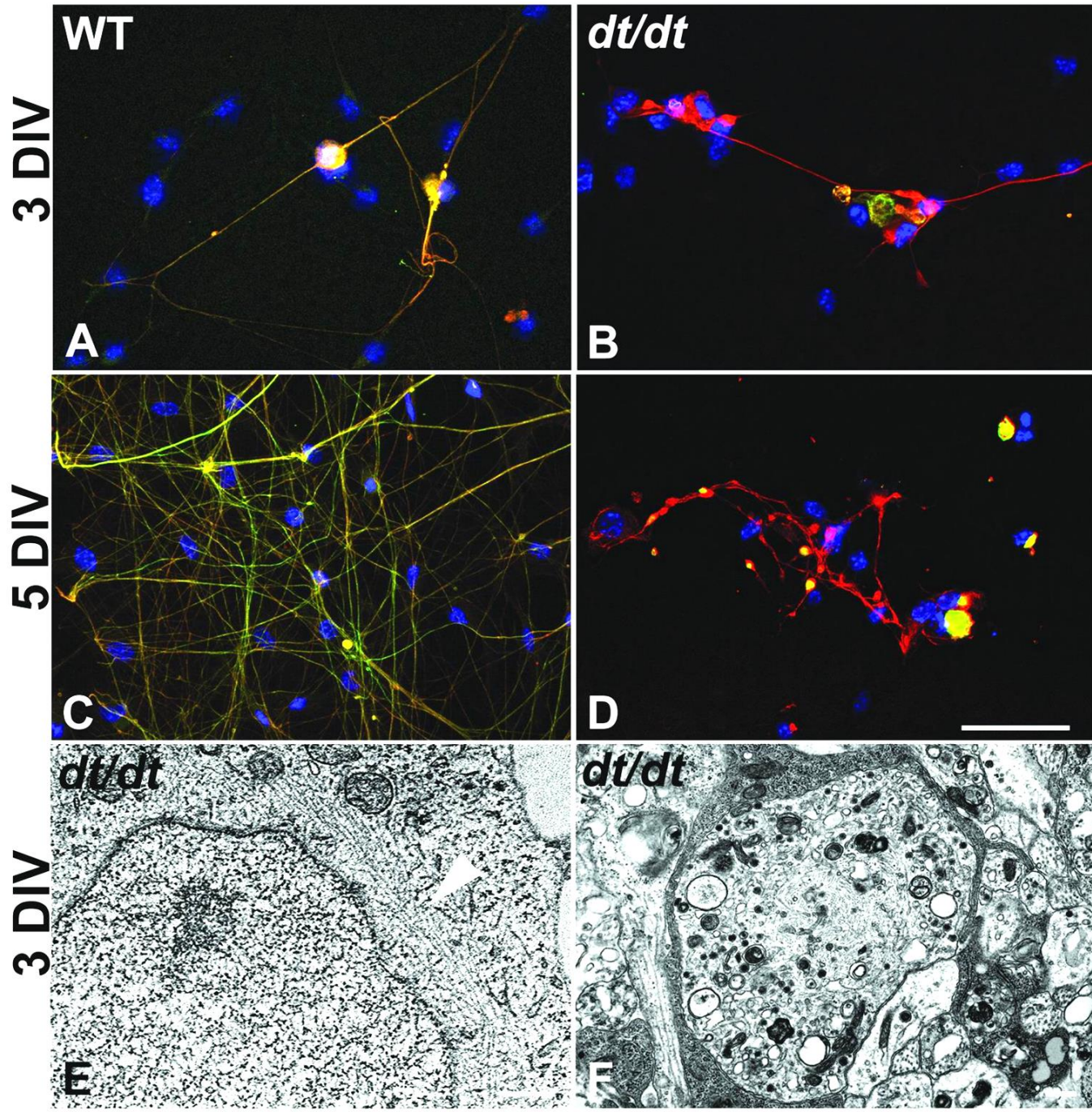


Primary culture DRG neurons

1. Take DRGs and transfer DRGs to a fresh ependroff tube with 0.5 ml HBSS (CMF) on ice.
2. Add 0.5 ml 0.25% Trypsin-EDTA and incubate in rotating incubator at 37°C for 15 min.
3. Resuspend with 40% FBS L15
4. Spin for 5 min at 1500 rpm, remove supernatant..
5. Resuspend with 1.5 ml 40% FBS L15 in incubator at 37°C for 15 min.
6. Spin for 5 min at 1500 rpm.
7. Resuspend in 2 ml NB1 with FBS, glucose, 100ng/ml NGF.
8. Transfer containing neurons medium to 30 mm poly-L-lysine coated Petri dish and then incubate 10-20 min (preplating).
9. Transfer the medium to 35 mm Petri dish containing poly-L-lysine coated slide.

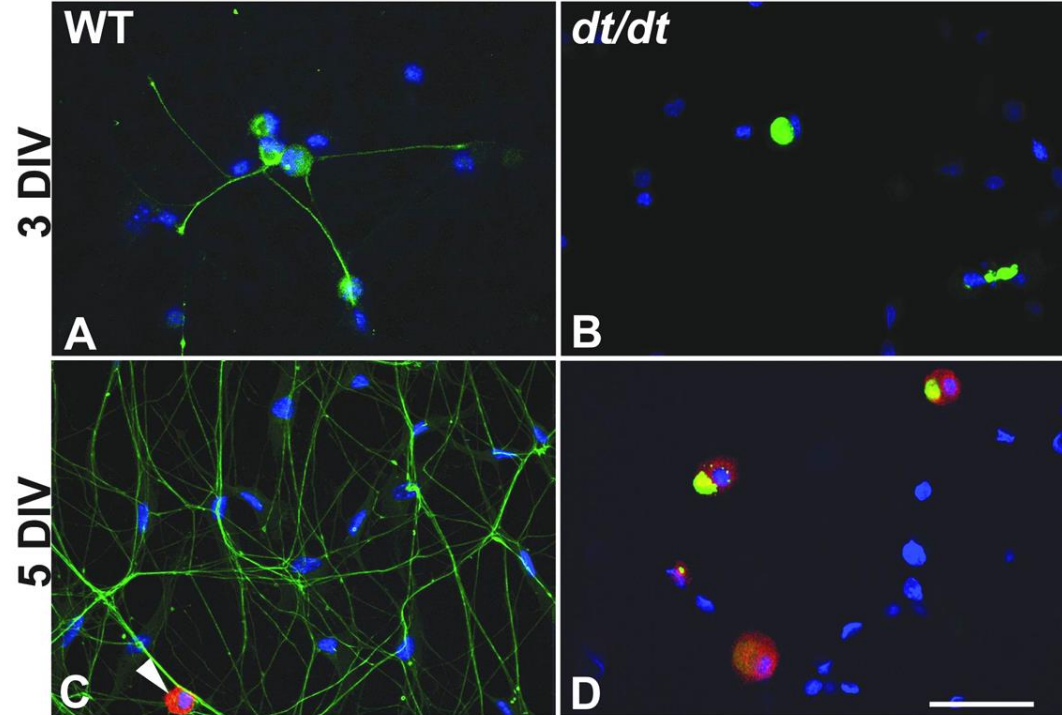
Cultured DRG
neurons
from E15.5
embryos

α -interneixin proteins
are accumulated in
the cell bodies as
well as in the
processes of *dt/dt*
neurons.



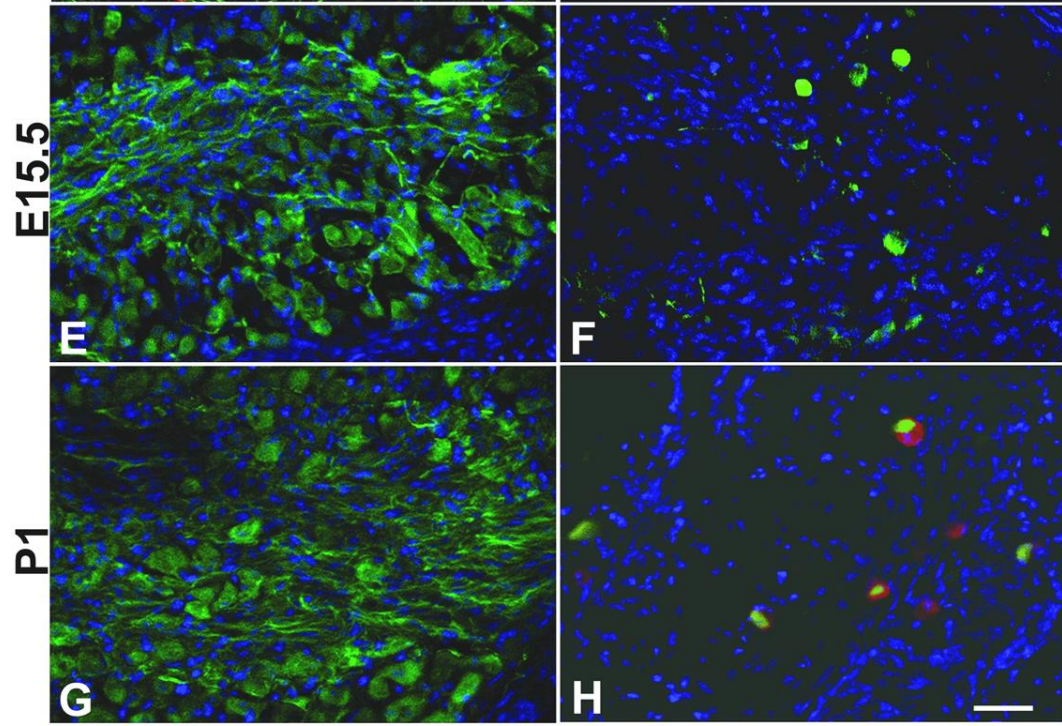
Primary culture of DRG neurons

	WT	<i>dt/dt</i>
Internexin	+	++ Aggregations
Activated Caspase	-	+

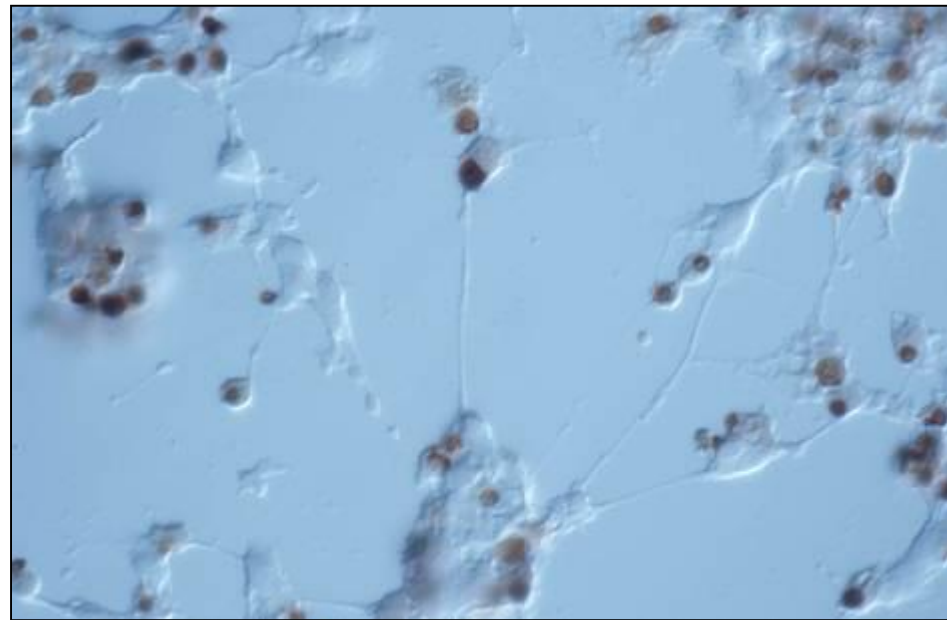
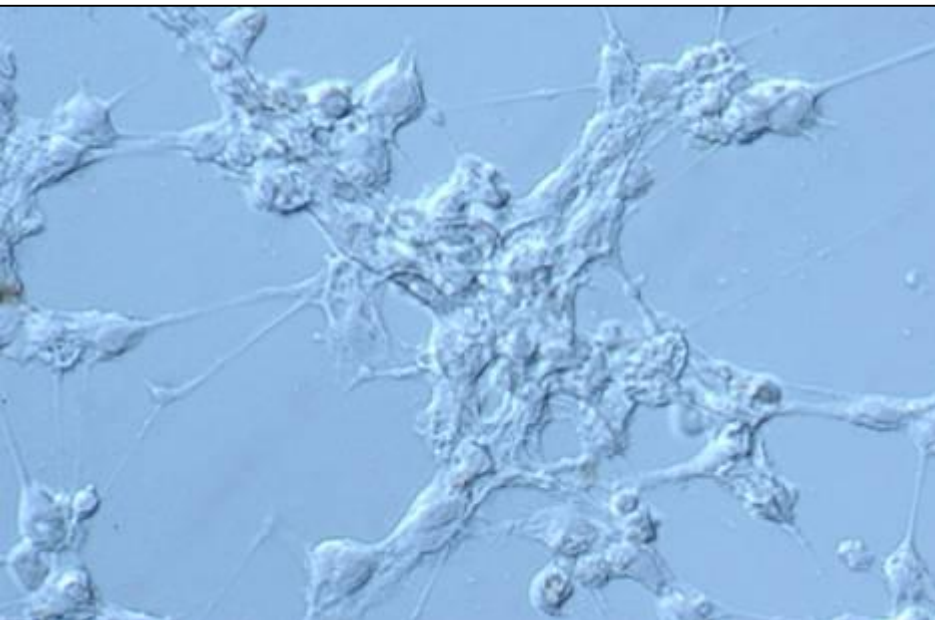
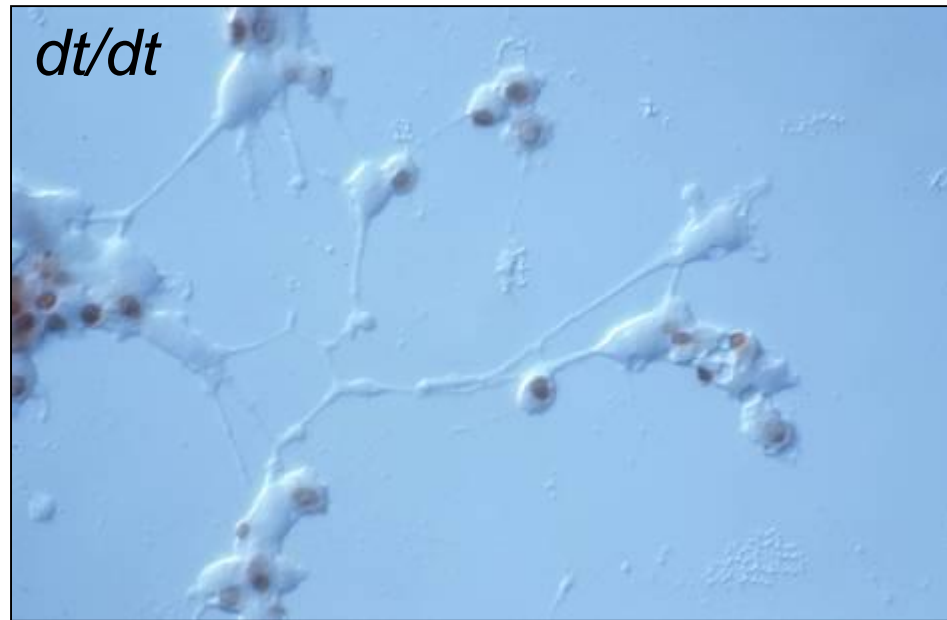
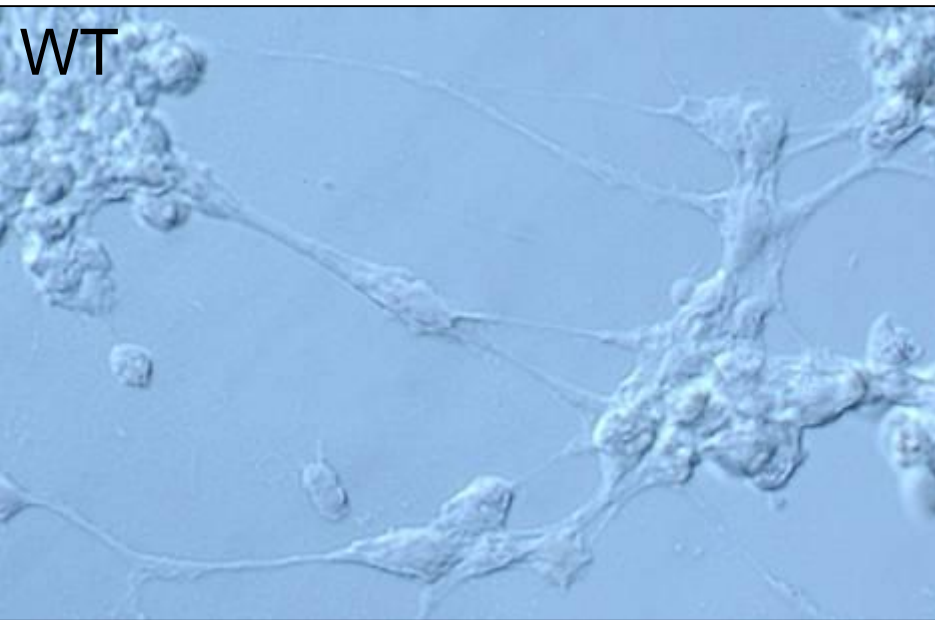


Perinatal development

	WT	<i>dt/dt</i>
Internexin	+	++ Aggregations
Activated Caspase	-	+



TUNEL Assays



Summary

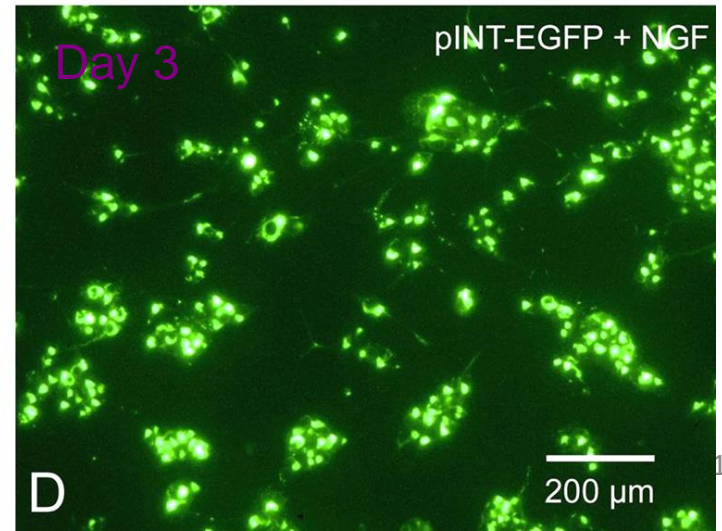
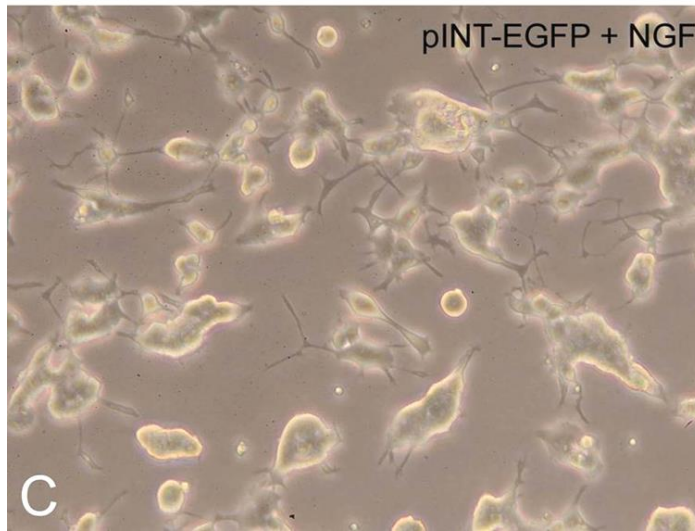
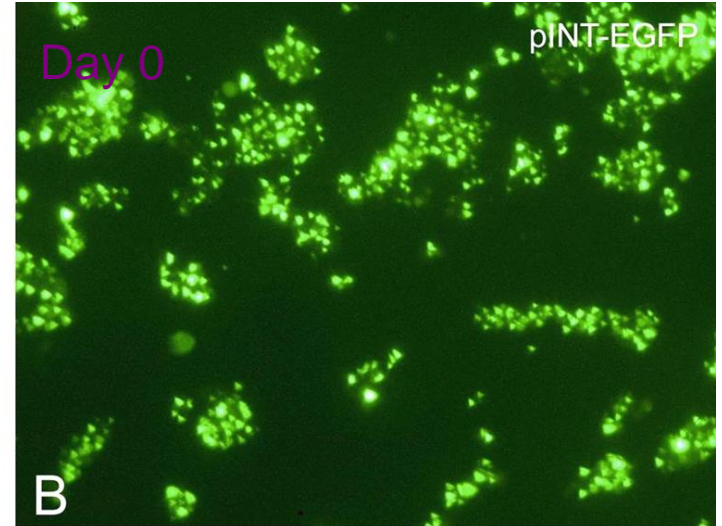
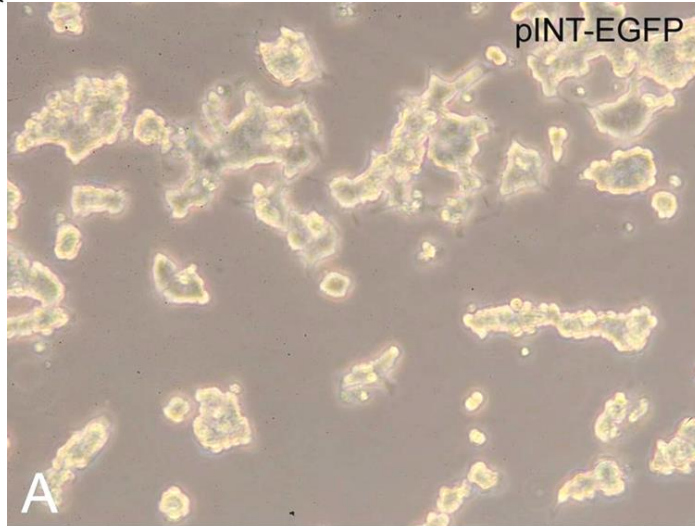
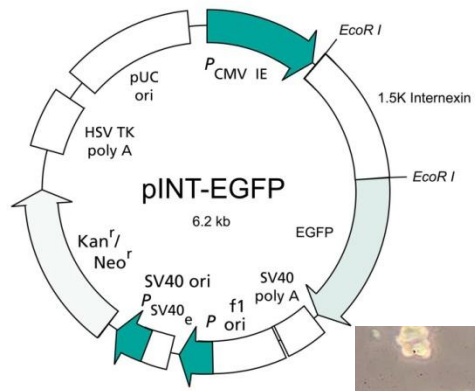
- The interaction between BPAG1 and α -internexin may be one of the key factors involved in the neuronal degeneration of DRG in the *dt* mutant.
- Abnormal accumulation of α -internexin and other cytoskeletal components may impair the axonal transport and subsequently turn on the cascade of neuronal apoptosis during development.

(J. Neuropathol. Exp. Neurol. 65:336-347 , 2006)

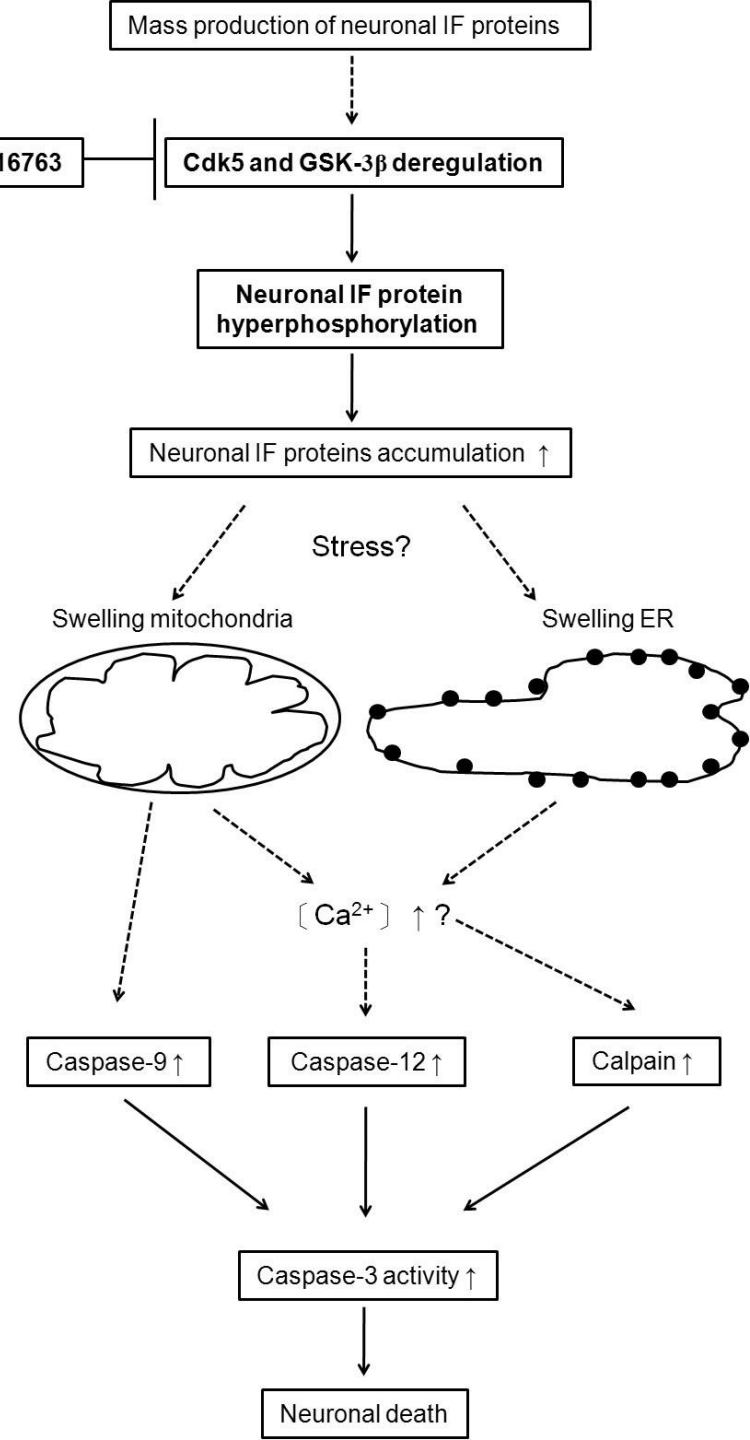
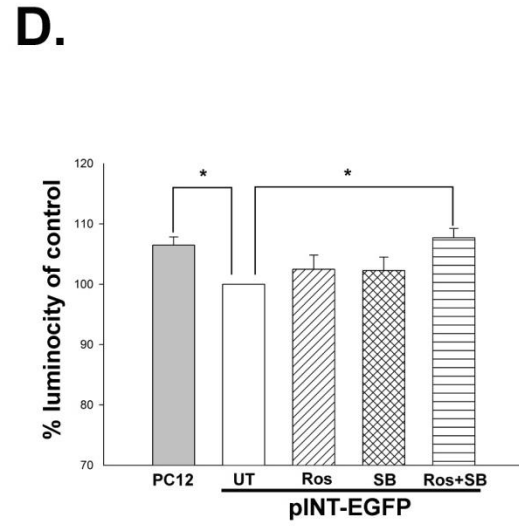
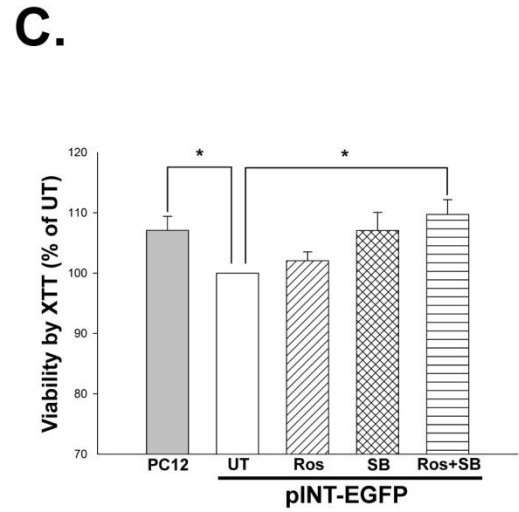
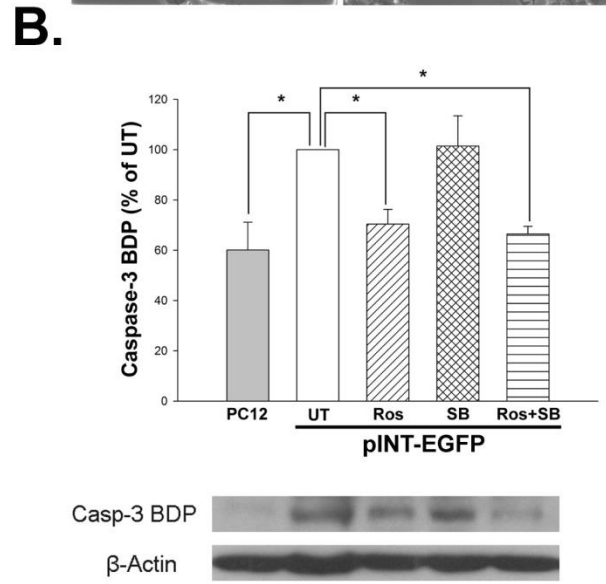
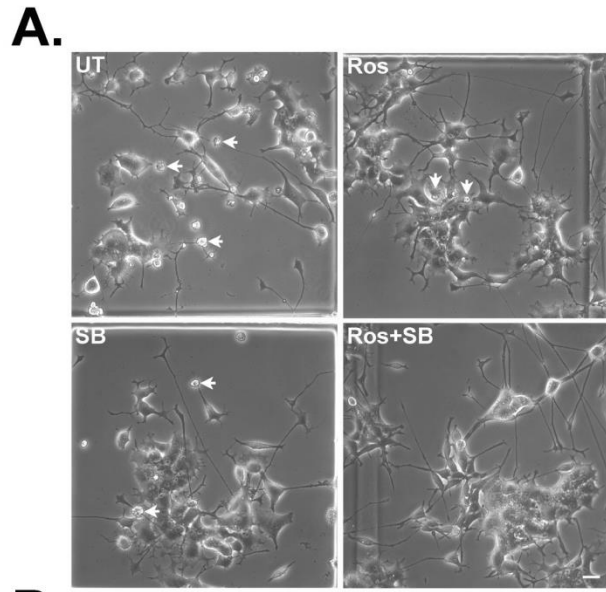
研究成果 (II)

Overexpression of neuronal intermediate filament α -internexin in the PC-12 cell line

(*J. Neurosci. Res.* 80:693-706, 2005)



A Cellular Model for the Neuronal Degeneration



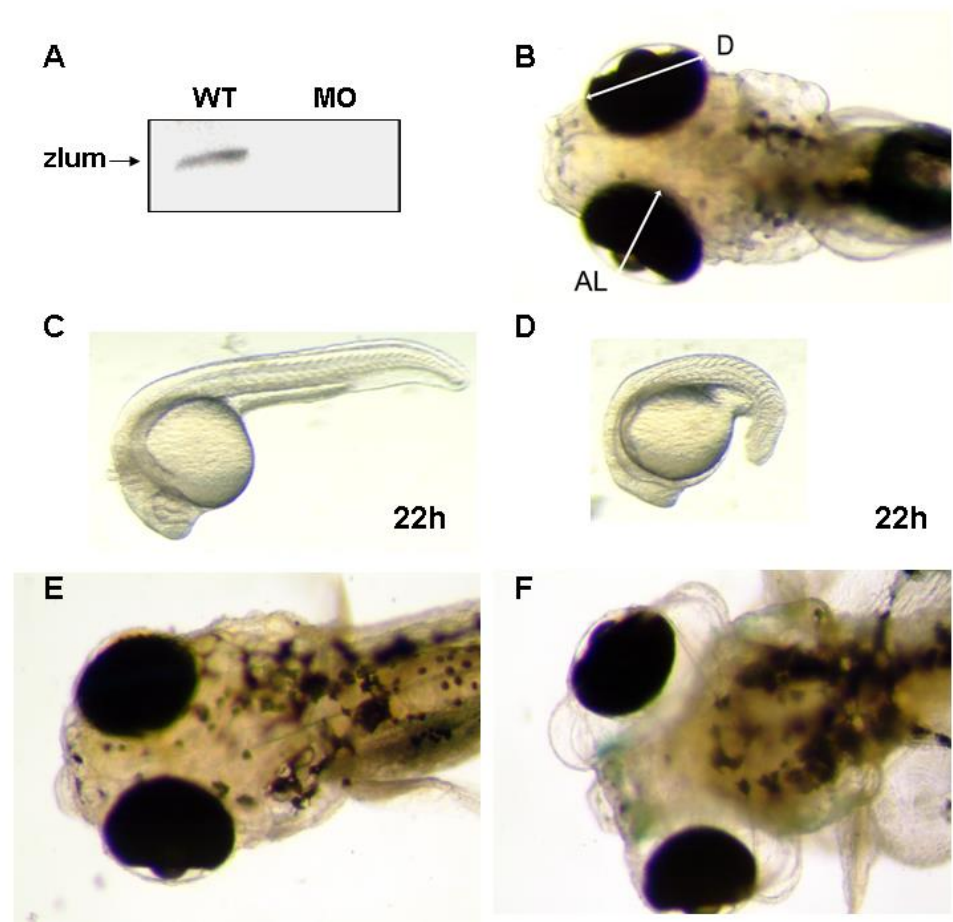
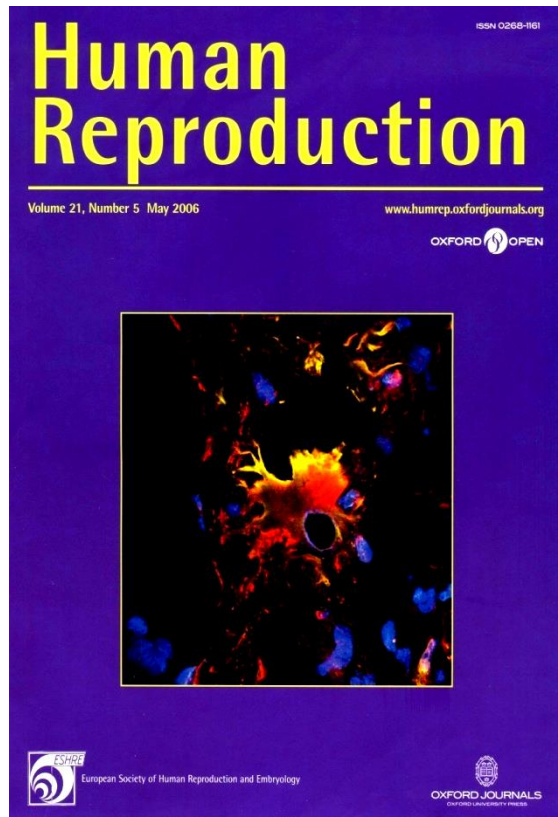
研究成果 (III)

1. Stellate transformation of invasive trophoblast

(Shih et al., *Human Reprod.* 2006; 21:1299-1304)

2. Knockdown of zebrafish lumican gene (ZLUM) causes scleral thinning and increased size of scleral coats.

(Yeh et al., *J Biol Chem.* 2010 Jun 15)



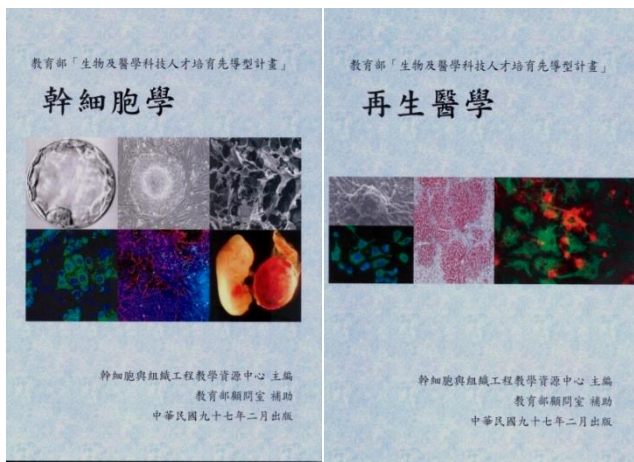
教學 (II)

- 負責大學部解剖學、神經解剖學等課程，教學評鑑結果滿意度均非常高。同時參與醫學院研究所核心共同課程分子生物學、細胞生物學、儀器分析等教學，教學評鑑結果滿意度亦均大於4.0以上。
- 另開設細胞生物學導論，並配合所內其他課程之教學，均深受師生肯定。**連續獲得2007、2008、2009年臺灣大學教學優良獎。**



教學 (III)

- 參與教育部第三階段生物及醫學科技人才培育先導型計畫，擔任「**幹細胞與組織工程教學資源中心**」主持人。負責輔導臺大、成大、中興、長庚、慈濟等夥伴大學規劃相關暑期課程教學，充分達到推廣教學之目標。



教材編纂 (2008)

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服務 (I)

- 負責醫學院之國際事務，擔任工作小組召集人，向校方爭取相對經費補助，並於98學年度促成院級功能性國際事務中心之成立與運作，同時兼任中心主任。
- 協助促成12所以上之姊妹校締約，並協助接待包括6位諾貝爾獎得主及超過百位以上之歐美日等國外賓訪客。



Professor Robert Huber (Nobel Laureate in Chemistry, 1988) (2008/11/10)



Professor Oliver Smithies (Nobel Laureate in Medicine, 2007) (2008/10/20)



Dr. Anne Weaver Hart (President) and **Dr. Hai-Lung Dai** (Dean of Science and Technology) from **Temple University** (2009/06/03)

服務 (II)

- 擔任聯合國教科文組織（UNESCO）其中之國際醫學生會 International Federation of Medical Students' Association (IFMSA) 外籍交換醫學生研究指導，分別指導來自荷蘭、義大利、奧地利、西班牙、葡萄牙、希臘、匈牙利、波蘭、斯洛維尼亞、塞爾維亞、賽普勒斯、巴西與泰國等十三國共26位年輕的醫學生，為臺灣大學拓展國際能見度及未來影響力。



Mr. Sebastiano Raimondo from Italy



Ms. Mutita Chaichalothorn from Thailand



Ms. Filipa M. Monteiro from Portugal

服務 (III)

- 擔任**學生事務分處主任**除負責輔導醫學院公衛學院學生外，並協助醫學校區規劃相關軟硬體之建設，包括**學生社團辦公室**及**圓形小劇場**之規劃、體育館球場及醫學人文博物館等整修工程，為醫學校區同學營造良好課外活動空間及人文學習環境。



學生社團辦公室



圓形小劇場



服務 (IV)

- 規劃向校方申請成立**醫學人文博物館**，爭取校經費補助。
- 負責**醫學人文傳承講座**之籌備及邀請工作，已陸續舉辦**13**場演講，藉此承先啟後的活動，凝聚各科系所老中青三代情感，深受各單位好評。



國立台灣大學醫學院
醫學傳承講座系列



98.09.25. 藥理學科 張傳炯教授傳承講座演講後合影

服務 (V)

- 擔任校級**醫學卓越研究中心執行秘書**，負責行政協調與核心服務工作。
- 自**2005**年起，負責每年舉辦研究中心**暑期研習營**，五年來培訓大學部同學總計超過**126**位從事基礎研究，鼓勵栽培臺大生醫領域新秀。



醫學卓越研究中心 2009 年暑期研習營得獎同學合影 (11/26)

服務 (VI): 校外服務

- 擔任 **臺灣幹細胞學會秘書長** (2007.5~2009.8)
- 中華民國解剖學會常務理事 (2008.3~2010.3)
- 2010年當選 **中華民國解剖學會理事長**
- The Editorial Board *Journal of Biomedicine and Biotechnology*



Sept. 27-28, 2008

臺灣幹細胞學會
舉辦「幹細胞、後
生遺傳學與發育生
物學國際研討會」

臺灣幹細胞學會年會暨國際研討會
幹細胞、後生遺傳學與發育生物學國際研討會
International Symposia on Stem Cells, Epigenetics and Development

Keynote Speakers

Director & Professor Connie Eaves Director of the Terry Fox Laboratory, Medical Genetics, UBC, Vancouver BC, Canada

Professor Tariq Enver Medical Research Council (MRC), Molecular Haematology Unit, Weatherall Institute of Molecular Medicine, John Radcliffe Hospital, University of Oxford, UK

Director Glyn Stacey Director of the UK Stem Cell Bank, National Institute for Biological Standards and Control, UK

Dr. Mitinori Saitou Laboratory Head of Mammalian Germ Cell Biology, Center for Developmental Biology, RIKEN Kobe Institute, Japan

Dr. Anne Ferguson-Smith Reader in Developmental Genetics, Department of Physiology, Development & Neuroscience, University of Cambridge, UK

Associate Professor Sheng Ding Department of Chemistry, The Scripps Research Institute, CA, USA

Director & Professor Toshio Suda Center for Integrated Medical Research, The Saksuguchi Laboratory of Developmental Biology School of Medicine, Keio University, Japan

地點: 臺大醫院國際會議中心 (臺北市徐州路2號)
時間: 2008年9月27-28日
報名: www.tssc.org.tw
臺灣幹細胞學會
連絡人: 黃小姐 (02)23123456 #8193
電子信箱: stemcell@ha.mc.ntu.edu.tw

Location: NTUH International Conference Center (No. 2, Xuzhou Rd, Taipei City 100, Taiwan)
Time: September 27-28, 2008
Registration: www.tssc.org.tw
Taiwan Society for Stem Cell Research
Contact person: Ms.Huang (02)23123456 #8193
E-mail: stemcell@ha.mc.ntu.edu.tw

主辦單位: 臺灣大學/臺灣幹細胞學會
指導單位: 教育部顧問室/國家科學委員會

Organized by National Taiwan University
Taiwan Society for Stem Cell Research
Supported by Ministry of Education Advisory Office
National Science Council



台灣大學解剖學暨細胞生物學科暨研究所
錢宗良教授 當選第十二屆理事長

感謝

青杏醫學文教基金會 之栽培！

