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NEWS RELEASE

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News release:
Hubble Zooms In on Bar of Favourite Spring Spiral Galaxy

27-Feb-2001 **Astronomers have long suspected that the bar systems that dominate the appearance of some spiral galaxies provide an efficient mechanism for fuelling star births at their centres. New results from the NASA/ESA Hubble Space Telescope provide evidence that this is indeed the case.**

The wonderful barred spiral galaxy NGC 2903 in the constellation of Leo is a well-known spring observing target for amateur astronomers. With a magnitude brighter than 10, it is easy to find and identify in a small telescope. However, only large-aperture telescopes or long-exposure photographs can reveal its intricate spiral structure.

NGC 2903's swirling whirlpool of stars spans 80,000 light-years – slightly less than our own Milky Way - and is located at a distance of some 25 million light-years. NGC 2903 is one of the more conspicuous northern objects that Charles Messier missed when compiling his catalogue of nebulous objects, so leaving its discovery to William Herschel.

This colourful image, obtained by the Wide Field and Planetary Camera 2 (WFPC2) onboard Hubble, lays bare the fine detail in the central part of the galaxy's bar. The image is dominated by the bar running diagonally just above the centre of the image. It is the structure with a slightly reddish glow lying within the bluish spiral arms. The reddish colour arises from large amounts of dust in the bar.

Bars in spiral galaxies seem to be ubiquitous in our local Universe. Up to two-thirds of all spirals contain bars. Astronomers have long suspected that the bars provide an efficient mechanism for fuelling star births in the centres of barred galaxies.

Astronomers from the United Kingdom, Australia and Spain, using Hubble's superb vision in the visible and infrared to probe deep into the central star-forming regions in this spiral and Hubble, have uncovered a surprise. The core of NGC 2903 is known for its complex, speckled appearance, full of 'hot-spots'. As the telescope resolved the 'hot-spots' in the centre into individual stars and star clusters for the first time, it became clear that most of the star-forming action does not actually take place in these hot-spots. "*The most striking feature in the Hubble images is that star formation seems to occur in nearby large regions of ionised hydrogen instead*", says Almudena Alonso-Herrero from the University of Hertfordshire in the UK. *"These star-forming regions are distributed in a mighty 2000 light-year wide ring around the centre of the galaxy, in a circumnuclear ring"* (seen as whitish glow around the centre in the image).

Circumnuclear rings are also seen in other galaxies and are often interpreted as being due to interstellar gas falling in towards their centres. *"We believe that the ring of newly-born stars around the core of NGC 2903 is created because the bar acts as a transport mechanism, tunnelling gas inwards"*, says Almudena Alonso-Herrero. *"Bars seem to be extremely efficient in triggering the formation of stars and they act as funnels for the flow of material from the outer parts of galaxy disks towards their centres".*

Hubble's close-up view also shows other interesting details in the galaxy's centre: huge dust lanes and lots of young stars are gathered in hot blue clusters sprinkled all over the spiral arms. NGC 2903 bears a close resemblance to the Milky Way, which is also believed to be a barred spiral galaxy. Barred spirals are excellent laboratories to study the processes that trigger star formation, and bars may be responsible for providing the gaseous fuel being gobbled up by massive central black holes in so-called active galaxies.

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Notes for editors
The Hubble Space Telescope is a project of international co-operation between ESA and NASA.

The results are described in Alonso-Herrero et al. (2001) available at: http://arXiv.org/format/astro-ph/0010522. The paper will be published in a forthcoming issue of Monthly Notices of the Royal Astronomical Society.

The scientists involved in these observations are Almudena Alonso-Herrero (University of Hertfordshire, UK), Stuart D. Ryder (Anglo-Australian Observatory, Australia) and Johan H. Knapen (Isaac Newton Group of Telescopes, Spain and the University of Hertfordshire, UK).

Image credit: ESA & NASA

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