



# Scientists of the Islamic world

## Abu Al-Qasim greatest medieval surgeon

This is a six-part series of articles on Arab and Muslim scientists written by different professors of the Department of Mathematics and Natural Sciences of Gulf University for Science and Technology — Editor

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Abu Al-Qasim Khalaf Ibn Al-Abbas Al-Zahrawi (936-1013), also known in the West as Abulcasis, was an Andalusian Arab Moslem physician. He is considered the greatest medieval surgeon to have appeared from the Islamic World, and one of the fathers of modern surgery. His comprehensive medical texts shaped both Islamic and European surgical procedures up until the Renaissance. His greatest contribution to history is the Kitab Al-Tasrif, a thirty-volume encyclopedia of medical practices. This encyclopedia was used as standard reference work in the subject in all universities of Europe for over five hundred years.

Abu Al-Qasim was born in the city of El-Zahra, six miles northwest of Córdoba, Andalusia. He was descended from the Ansar Arab tribe who settled earlier in Spain. He lived most of his life in Córdoba. It is also where he studied, taught and practiced medicine and surgery until shortly before his death in about 1013, two years after the sacking of El-Zahra.

### Kitab Al-Tasrif

Abu Al-Qasim's thirty-chapter medical treatise, Kitab Al-Tasrif, completed in the year 1000, covered a broad range of medical topics, which contained data that had accumulated during a career that spanned almost 50 years of training, teaching and practice.

The beginning of the first article of



Abu Al-Qasim Khalaf Ibn Al-Abbas Al-Zahrawi

Part I of Kitab Al-Tasrif by Al-Zahrawi. The page shows his definition of medicine as the restoration of health in healthy individuals and its restoration to sick individuals as much as possible by human abilities.

He expressed his credo in his book by writing: "Whatever I know, I owe solely to my assiduous reading of books of the ancients, to my desire to understand them and to appropriate this science; then I have added the observation and experience of my whole life"

### Contributions to Surgery

The 300 pages of the book on surgery represent the first book of this size devoted solely to surgery, which at that time also included dentistry and what one may term surgical dermatology.

Here, Al-Zahrawi developed all aspects of surgery and its various branches, from ophthalmology and diseases of the ear, nose and throat, surgery of the head and neck, to general surgery, obstetrics and gynecology. Military medicine, urology and orthopaedic sur-

gery were also included.

### Surgical procedures

Not always properly credited, Abu Al-Qasim's Al-Tasrif described both what would later become known as "Kocher's method" for treating a dislocated shoulder and "Walcher position" in obstetrics. Al-Tasrif described how to ligature blood vessels almost 600 years before AmbroiseParé, and was the first recorded book to document several dental devices. He also described the exposure and division of the temporal artery to relieve certain types of headaches, diversion of urine into the rectum, reduction mammoplasty for excessively large breasts and the extraction of cataracts. He wrote extensively about injuries to bones and joints, even mentioning fractures of the nasal bones and of the vertebrae

### Surgical instruments

Abu Al-Qasim also introduced his famous collection of over 200 surgical instruments such as scalpels, curettes, retractors, spoons, sounds, hooks, rods, and specula. Many of these instruments were never used before by any previous surgeons.

Page from a 1531 Latin translation by Peter Argellata of Al-Zahrawi's treatise on surgical and medical instruments.

His use of catgut for internal stitching is still practiced in modern surgery. The catgut appears to be the only natural substance capable of dissolving and is acceptable by the body. AbuAl-Qasim also invented the forceps for extracting a dead fetus, as illustrated in the Al-Tasrif.

### Contributions to Pharmacology

In the section on pharmacology and therapeutics, he covered areas such as cardiac drugs, emetics, laxatives, cosmetology, dietetics, weights and meas-

ures and drug substitution.

### Printing on tablets

Al-Zahrawi is also considered to be the founder and first pilot for the printing industry, and industry of tablets; where the name of the drug is printed on each disk.

He developed the first step in printing industry several centuries before the German John Gothenburg. His idea of printing was stated out in the twenty-eighth article of his book. For the first time in the history of medicine and pharmacy, Al-Zahrawi described how to make grains (tablets), and how to make a template into which these are prepared, with printing their names at the same time. He used a slab of ebony or ivory split in half in length, and engraved on the bottom of a double-sided disc the name of medicine to be made, printed in reverse, so that the pattern is true at the exit from the mold. He stated that this will prevent fraud in the pharmaceuticals and be subject to medical observation.

### Contributions to ethical norms

Artistic scene of Al-Zahrawi treating a patient while students look on. Source: Wellcome Library, London.

### Doctor-patient relationship

Al-Zahrawi emphasized the importance of a good doctor-patient relationship and took great care to ensure the safety of his patients and win their trust irrespective of their social status. Al-Zahrawi's clinical methods showed extreme foresight - he promoted the close observation of individual cases in order to establish the most accurate diagnosis and the best possible treatment. He insisted on compliance with ethical norms and warned against dubious practices adopted by some physicians for purposes of material gain. He also cautioned against quacks who claimed surgical skills they did not possess.

### Relationship with students

In his book, Al-Zahrawi expressed his concern about the welfare of his students whom he called "my children".

His advice to his students before doing any surgery is, that they should not do it unless they are familiar in all related matters as well as in anatomy and the use of surgical instruments.

He said: "You should be aware that the work by hand (surgery) is divided into two parts: the work accompanied by safety, and the work to be with it damage in most cases. I have alerted everywhere in this book from work in which to be with damage and fear. You should refuse it and avoid it. Take for yourselves firmness and prudence, and for your patients with kindness, and use the best way that leads to safety and commendable end."

### Reception

Al-Tasrif was later translated into Latin by Gerard of Cremona in the 12th century. For perhaps five centuries during the European Middle Ages, it was the primary source for European medical knowledge, and served as a reference for doctors and surgeons.

In the 14th century, the French surgeon Guy de Chauliac in his 'Great Surgery', completed in about 1363, quoted Al-Tasrif over 200 times. Al-Zahrawi was described by Pietro Argallata (died 1423) as "without doubt the chief of all surgeons". Jaques Delechamps (1513-1588), another French surgeon, made extensive use of Al-Tasrif in his elaborate commentary, confirming the great prestige of Al-Zahrawi throughout the Middle Ages and up to the Renaissance.

Frontispiece of the Latin translation of Al-Zahrawi Kitab Al-Tasrif: Liber theoricacneonpracticacAlshaharavii. This is the translation of the first two books of Al-Tasrif, edited by Paul Ricius, 1519)

The first two treatises were translated into Latin as Liber Theoricac, which was printed in Augustusburg in 1519. In them Al-Zahrawi classified 325 diseases and discussed their symptomatology and treatment. In page 145 of this Latin translation he described, for the first time in medical history, a haemorrhagic disease transmitted by unaffected women to their male children, today we call it haemophilia.

Of all the contents of Al-Zahrawi Al-Tasrif, book 30 on surgery became the most famous and had by far the widest and the greatest influence. Translated into Latin by Gerard of Cremona (1114-1187), it went into at least ten Latin editions between 1497 and 1544, before it was translated into French, Hebrew, and English. The last edition was that of John Channing in Oxford (1778), which contained both the original Arabic text and its Latin translation of alternate pages. Almost all European authors of surgical texts from the 12th to the 16th centuries referred to Al-Zahrawi's surgery and copied from him.

Extract form the Arabic text of Al-Tasrif as published in De chirurgica.

It is clear from Al-Zahrawi's life history and from his writings that he devoted his entire life and genius to the advancement of medicine as a whole and surgery in particular.

It is no wonder then that Al-Zahrawi's outstanding achievement awakened in Europe a hunger for Arabic medical literature, and thence his book reached such prominence that a modern historian considered it as the foremost textbook in Western Christendom.

References:  
<http://en.wikipedia.org/wiki/Zahrawi>  
[http://www.ummah.net/history/schoolars/el\\_zahrawi/](http://www.ummah.net/history/schoolars/el_zahrawi/)  
<http://muslimheritage.com/topics/default.cfm?ArticleID=223>

## Inequality high

Low social status is bad for health

By Maia Szalavitz

Inequality is at an all-time high in America. Since the 2008 crash, recent IRS figures show, the wealth of the top 1 percent grew 31 percent while the rest of American incomes grew by less than 1 percent. But although it might appear that income disparities affect only the poor and have primarily an economic impact, dozens of studies now link extreme inequality with poor health and shorter lives, across the entire socioeconomic spectrum.

Overall, the United States has among the largest social and economic inequalities of any rich country. Japan and the Scandinavian countries have the smallest. The more equal countries also have the longest life expectancies — and the richest American men only have the life expectancy of an average Japanese man, which is 4.5 years longer than the US average, according to Sir Michael Marmot, a leading researcher on inequality and professor of epidemiology at University College London. He notes that residents of affluent suburban Maryland live, on average, 17 years longer than people in inner city Washington, DC.

### Obesity

Marmot's own research focuses on the UK, where a national healthcare system provides all socioeconomic classes with quality care. He has compared low- and high-ranking British civil servants over the course of their lives on a variety of health measures, ranging from cancer to obesity to alcohol addiction. For virtually all conditions except breast and prostate cancer (it is not clear why these are exceptions), Marmot found that those at the bottom are at dramatically greater risk, with overall mortality up to three times higher, depending on the specific condition. Increased levels of unhealthy behavior among the less-affluent — like smoking — did not account for all of the differences. Also, even the lowest-ranked civil servants in Marmot's research were employed, meaning that those on bottom rungs weren't impoverished, simply less well-off.

The reason for the differences, say Marmot, Stanford neuroscientist Robert Sapolsky, Rockefeller University's Bruce McEwen and a growing number of their peers, is found instead in the stress system, which in primates seems fine-tuned to rank and hierarchy — not absolute poverty, but relative social position.

"For the poor, more inequality means more anger at what they don't have and more cognitive load from the worry about how to keep up," Sapolsky says. "For the wealthy, it's more fear about the menace of the have-nots and more effort put into walling themselves off from them. For everyone, there's less social support — by definition, the more widely-spread and unequal a hierarchy, the fewer peers one has, and true social support requires the symmetry of peers."

In the baboons Sapolsky has studied, low status is linked to high levels of the stress hormone cortisol, which can compromise the immune system. Low-ranked baboons, like lower-status humans, have a weakened response to infectious diseases and an increased risk for cardiovascular disease and most cancers.

## Syria

Regional, local powers take advantage of situation

# Syria war stirs tensions in Tripoli

TRIPOLI, Lebanon, Oct 31, (AFP): In the impoverished Bab al-Tebbaneh and Jabal Mohsen neighbourhoods of Lebanon's second city Tripoli, the war in neighbouring Syria has aggravated decades-old sectarian and political tensions.

Regional and local powers have taken advantage of the situation, arming poor fighters in the neighbourhoods to fight a proxy war over Syria.

Jabal Mohsen, where most of the population belongs to President Bashar al-Assad's Alawite sect, has long backed the Damascus regime.

Majority-Sunni Bab el-Tebbaneh, however, supports the rebels who have been fighting to overthrow Assad for the past 31 months.

But sectarian fighting in the two districts started long before: since 2008, there have been 18 rounds of fighting, killing more than 200 and wounding 3,000 others.

The most recent clashes between the two, fought across the aptly-named Syria Street that divides them, started on Oct 21, killing 14 people.

After each round of violence, Lebanese troops deploy to the area, bringing a temporary calm to the streets of the city of 500,000 people, of whom 80 percent are Sunni and just 11 percent Alawite.

### Conflict

"We are suffering the consequences of the Syrian conflict," said Nabil Rahim, a Sunni cleric in the city who has long worked to soothe tensions between the two communities.

But Rahim sees three main factors fuelling violence in the city: the conflict in Syria, political tensions in Lebanon, and the country's own bitter sectarian problems that caused a civil war from 1975-1990.

"In Jabal Mohsen, we know that (powerful Lebanese Shiite movement) Hezbollah, Iran and the Syrian regime are providing weapons and funds," he says.

"It is more complicated in Bab al-Tebbaneh," he adds.

"Those doing the shooting are residents, Islamists and supporters of the March 14 coalition," one of Lebanon's main political groupings that has long opposed Assad.

"But many are fighting just for the money," he added.

Syria militarily and politically dominated its tiny neighbour for more than 30 years after Assad's father Hafez al-Assad intervened in Lebanon's civil war in 1976.

Its involvement, which waned when Assad withdrew his troops in 2005, polarised Lebanese politics. Today, the



A Syrian refugee girl plays with a toy gun at her family's house in Zarqa, Jordan's industrial center where thousands of Syrian refugees are living, northeast of the capital Amman, Oct 21, 2013. More than 420,000 Syrian refugees have settled in Jordan's cities, struggling for survival on UN foods stamps and straining the meager resources of a country that absorbed millions of exiles from the region's hotspots in the past. (AP)

March 8 coalition supports Damascus' influence in Lebanon, and March 14 vociferously opposes it.

The violence raging in Tripoli now is in part the legacy of this intervention.

The war-scarred neighbourhoods saw their first clashes in 1976, when Alawites and supporters of Hafez al-Assad fought against the Palestinian Liberation Organisation then headquartered in Lebanon.

In the 1980s, the front changed to pit pro-Assad fighters against the Islamist Tawhid movement, which was strong in Bab al-Tebbaneh.

Then in 1986, when Syrian troops entered Bab al-Tebbaneh, they and their Lebanese backers killed hundreds of people in a massacre remembered to this day.

Under the iron fist of the Syrian regime, there was a semblance of peace forced by control.

At that time, commerce and even mixed marriages between residents of Bab al-Tebbaneh and Jabal Mohsen flourished.

### Break

The assassination of former prime minister Rafiq Hariri in 2005 changed all that. Political tensions soared once again, and were further exacerbated by the outbreak of the Syrian conflict in March 2011.

Lebanon's most prominent Sunni politicians have denied ties to armed groups in the city, and have called for help to clear Tripoli of weapons.

Former prime minister and Sunni leader Saad Hariri has condemned the fighting as "a dirty war" waged by Assad against Tripoli through his "local tools", in reference to Jabal Mohsen's Alawites and pro-Assad movements.

Sunni leaders have also demanded

the dissolution of the Jabal Mohsen-based Arab Democratic Party that represents Tripoli's Alawites, after two horrific car bomb explosions near two mosques in August killed 45 people.

The authorities have since issued arrest warrants for seven Alawites from Jabal Mohsen over the explosions.

The ADP, meanwhile, whose headquarters are in Jabal Mohsen, blames the violence on Sunni leaders.

Local journalist Ghassan Rifi says the fighting between the two neighbourhoods reflects regional strains over the Syrian conflict.

"The latest flare-up is the result of Syrian-Saudi tensions," Rifi told AFP, referring to Sunni-majority Saudi Arabia, a key backer of the anti-Assad revolt.

Rahim also says that some people in

Tripoli's flashpoints are fighting for financial reasons.

"It's true that some fight to defend themselves, but others are driven by sectarianism and money".

One angry shopkeeper in the city was sure that the weapons and the money fuelling the cycle of violence was coming from outside.

"The gunmen in Bab al-Tebbaneh don't have the money to buy bread, how could they afford weapons?", he asked, accusing politicians of financing the fighters.

This week, as troops once again returned to the streets of Bab al-Tebbaneh and Jabal Mohsen, residents were sceptical that troops would bring lasting peace.

For Rahim, there can be no solution for Tripoli "until the Syrian crisis ends, there is national reconciliation, and all funding for weapons comes to a halt".